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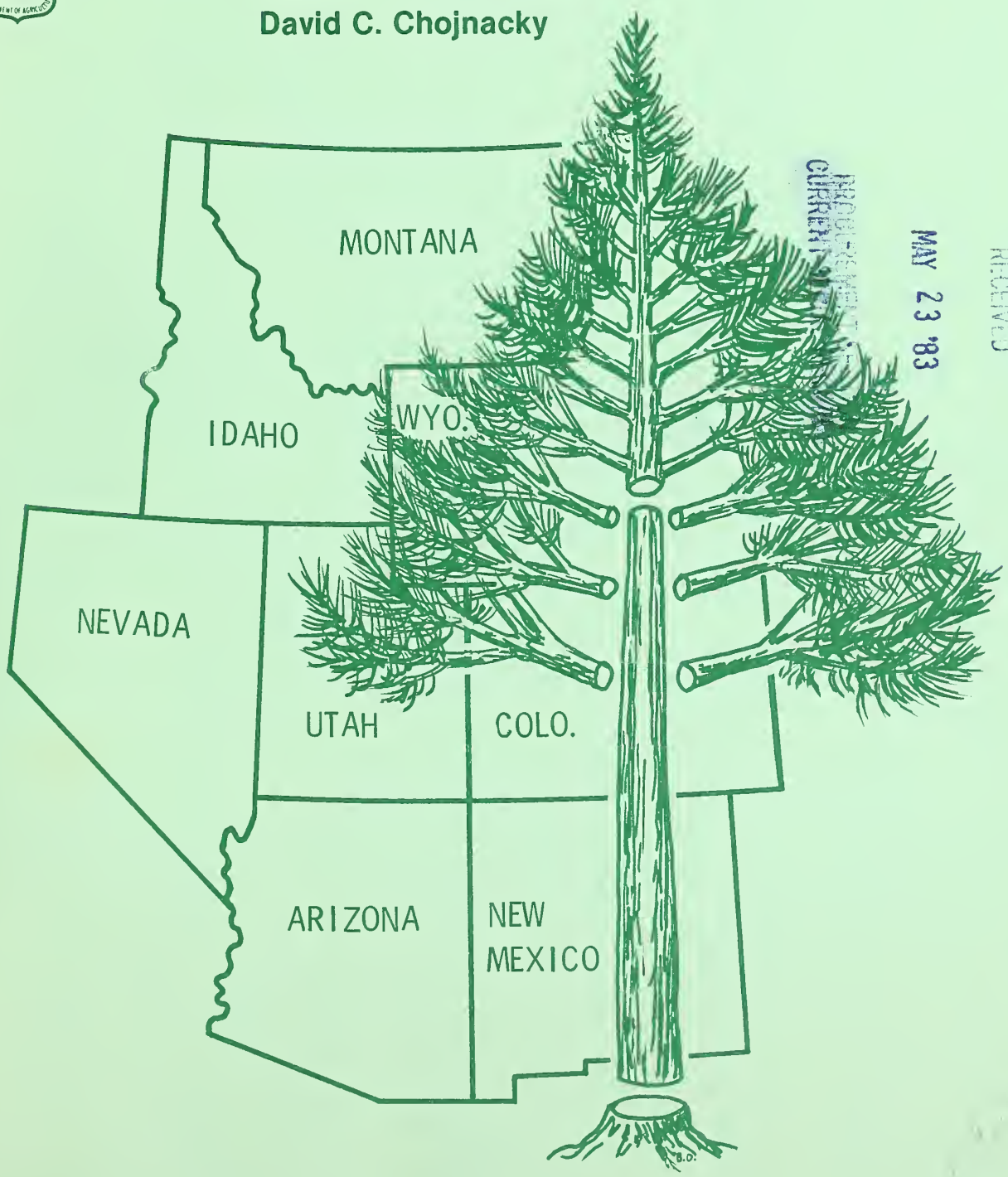
Whole Tree Volume Estimates For The Rocky Mountain States

**Dwane D. Van Hooser
David C. Chojnacky**



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RESEARCH SUMMARY

The increasing cost of fossil fuels and the rising demand for wood as an alternative have created a need to estimate the amount of wood available from the whole tree, not just the merchantable stem. This report describes methods for converting merchantable volume to weight, and for predicting weights and volumes of wood in tops and limbs. The techniques were used to convert basic merchantable volume statistics for the Rocky Mountain States to dry weight for tree components such as bole, top, and limbs.

The study indicates that the whole tree will produce 31 percent more wood fiber than the merchantable bole alone. An appendix provides data summaries by species, diameter class, type of timber, tree component, and ownership for the Rocky Mountain States.

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Whole Tree Volume Estimates For The Rocky Mountain States

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INTRODUCTION

Wood has historically been a major source of fuel. As recently as 1950 fuelwood was the third-ranking product being removed from the forests of the United States (USDA 1958). From the early 1950's until recently, however, the amount of material cut specifically for fuelwood was on the decline, dropping from more than 58 million cords in 1952 to just over 16 million cords in 1970 (USDA 1974). Recent evidence indicates this trend is reversing (USDA 1982).

Worldwide demand for energy is rising rapidly, with an associated rise in price; predictably, material only marginally useful for fuel is becoming more and more appealing. To fully evaluate how much of this material might be available for conversion to fuel or energy, techniques must be developed to convert conventional summaries of merchantable volume to estimates of total wood fiber.

For example, the most recent analysis of the timber situation in the United States indicates that the Rocky Mountain States contain 112.4 billion cubic feet of timber, of which 89 percent is classed as growing stock, 7 percent as salvable dead, and the remainder as rough or rotten trees (terms are defined in appendix A). As a first step in analyzing the availability of this material for fuel, a manager would convert these estimates to component weight and estimate the amount of material that might be potentially available from those components of the tree that are not included in these estimates of merchantable volume; namely, tops, limbs, and bark. The manager would also estimate how much material is potentially available from other than commercial timberland, logging slash, and mill residues. These estimates are beyond the scope of this paper; however, the need for obtaining these data is receiving serious consideration in current and for future resource inventories.

This paper presents factors for converting current estimates of merchantable volume to weight, and models for predicting the weights and volume of tops and limbs. Moreover, these factors and models were used to convert the basic timber statistics for the Rocky Mountain States (fig. 1) from cubic foot volume to dry weight for each tree component (fig. 2). Data summaries are found in appendix B.

Even though the summaries presented in this report are based on the most up-to-date information available for the Rocky Mountain States, the nature of the data was such that only gross estimators could be used to predict bole, top, and limb weights. Although not as precise as desired, the data do represent a first step in providing fiber estimates of the total forest resource in the Rocky Mountain States.

Figure 1.—Rocky Mountain States.

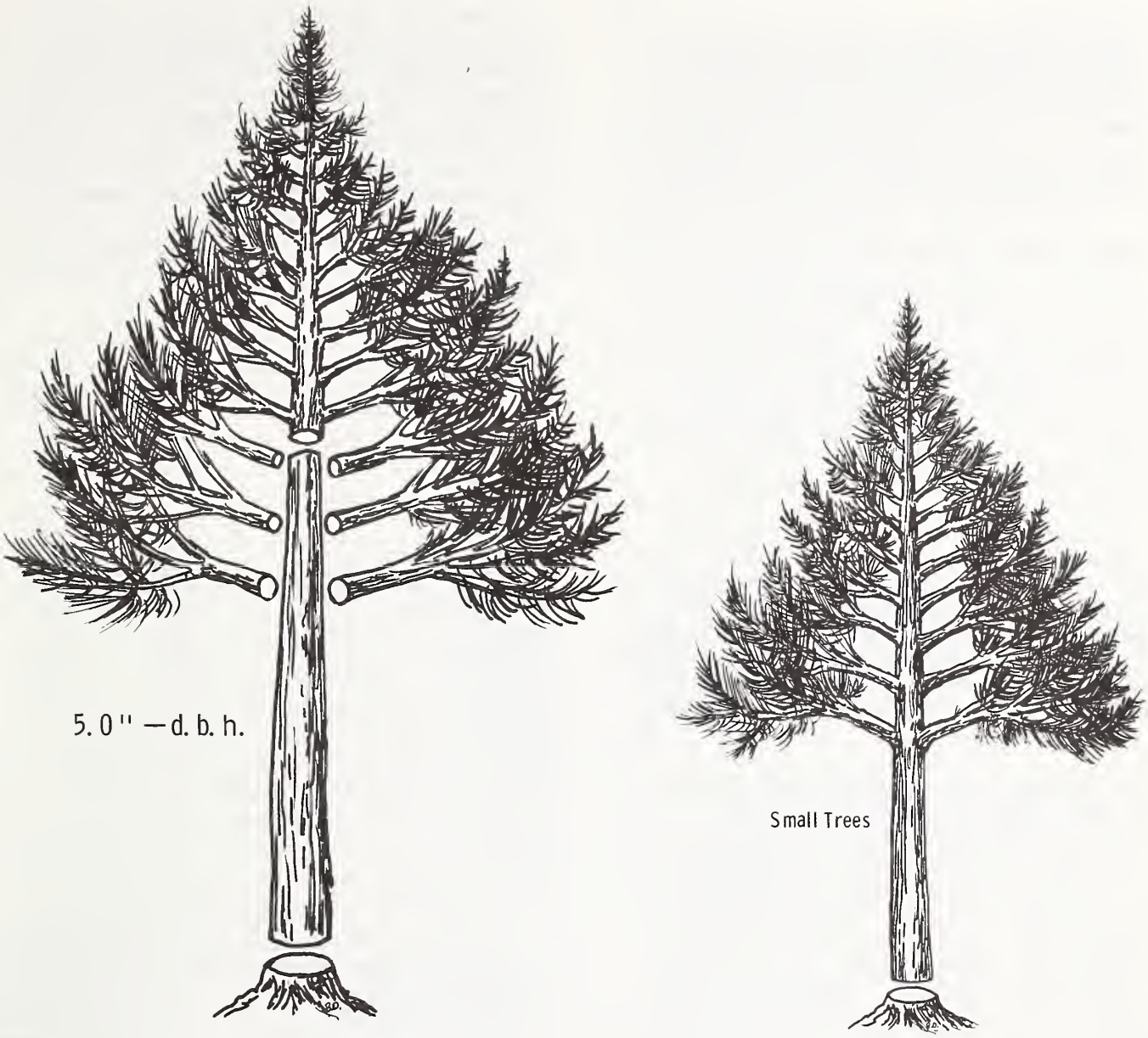

Figure 2.—Tree components.

METHODS

Few methods exist for estimating total weight for trees of the Rocky Mountain region. There are, however, equations available for estimating total tree weight for Rocky Mountain tree species occurring in Canada and the Pacific Northwest (Kurucz 1961; Krumlik 1974; Johnstone 1970; and Gholz and others 1979). These models could not be used because the data base available for total fiber was not compatible with individual tree prediction equations.

Some equations had been developed for calculating the weight of various components of trees. Brown (1978) has developed crown weight prediction equations for northern Idaho and Montana conifers. Gary (1976) worked on lodgepole pine (*Pinus contorta* Dougl.) crown structure and biomass in Colorado. Bartos and Johnston (1978) have developed equations for aspen (*Populus tremuloides* Michx.) in Utah and Wyoming. Zimmerman (1979) estimated biomass for aspen and several northeastern Utah conifers. Snell and Max (1982) have developed bark-to-wood ratios for determining the amount of bark on a tree from the volume or weight of bole wood. These models were used or, in some cases, modified by reanalyzing the raw data, in order to develop the summaries in appendix B.

The data base for this study was the resource summaries developed for the latest timber appraisal (USDA 1982) and included numbers of trees and bole wood volume to a 4-inch top summarized by State, ownership, species, and diameter class. Because the data were already grouped into State-level estimates, bole volume was converted to weight using wood density factors. Top and branch weights were estimated using regression equations, with separate equations developed for trees 5.0 inches d.b.h. and larger, and also for trees less than 5.0 inches d.b.h.

Small Trees

Because the survey procedures used by the Forest Survey project do not include bole-length measurements on trees less than 5.0 inches d.b.h., no attempt was made to separate the weight of small trees into the same components used for trees 5.0 inch and larger in d.b.h. Instead, the bole component was included in the top and branch estimate for small trees.

Trees 5.0 Inches D.B.H. and Larger

Bole weight.—Bole weight was estimated by using wood density factors (table 1) derived from tables 3-7 and 4-2 in the Wood Handbook (USDA 1974) and other available sources. Wood density, which is a function of the specific gravity of the wood and the density of water, is highly variable both within and between species. In the Rocky Mountain States, available data suggests a range of wood densities from slightly more than 19 lb/ft^3 for cottonwood to just over 34 lb/ft^3 for Southwestern hardwoods.

To paraphrase the Wood Handbook, the calculation of wood density at specified levels of moisture content is usually based on average species characteristics. The true value will, of course, differ because of natural variations in anatomy, actual moisture content, and the proportions of heartwood and sapwood that occur. Nevertheless, the approximation of wood density is considered sufficiently accurate to permit proper utilization of wood products where weight is required.

Table 1—Generalized wood density factors by species for the Rocky Mountain States[1]

Species	Wood density factor
Softwoods	*Pounds/cubic foot ovendry*
True fir	
White fir	23.09
Subalpine fir	19.34
Grand fir	21.84
Western redcedar	19.34
Western hemlock	26.21
Western larch	29.95
Lodgepole pine	23.71
Ponderosa pine	23.71
Western white pine	21.84
Engelmann spruce	20.59
Douglas-fir	
Idaho, Montana, Wyoming	28.08
Utah, Arizona, Colorado, New Mexico, Nevada, and Western South Dakota	26.83
Other softwoods	23.71
Hardwoods	
Aspen	21.84
Cottonwood	19.34
Other hardwoods	
Arizona, New Mexico	34.32
All remaining States	24.96

[1]These factors are regionwide averages. The factors used to develop the summaries in appendix B varied by ownership class and State and are available from the authors.

The bark portion of bole weight was estimated by multiplying the bole weight by a bark-to-wood ratio (table 2). Ratios for all species except Engelmann spruce (*Picea engelmannii* Parry), subalpine fir (*Abies lasiocarpa* (Hook.) Nutt.), and aspen were taken from work done by Snell and Max (1982) in the Pacific Northwest. The spruce, subalpine fir, and aspen ratios were developed from data collected by Zimmerman (1979) in Utah. These ratios were computed by the jackknife estimation method used by Snell and Max. Ratios for "other softwoods" and "other hardwoods" in table 2 were estimated based on similarities to species for which bark ratios were known.

Table 2.—Bark-to-wood weight ratios by species for the Rocky Mountain States

Species	Bark-to-wood ratio
Softwoods	
True firs	
White fir	0.18
Subalpine fir	.18
Grand fir	.18
Western redcedar	.10
Western hemlock	.13
Western larch	.10
Lodgepole pine	.08
Ponderosa pine	.19
Western white pine	.16
Engelmann spruce	.13
Douglas-fir	.15
Other softwoods	.10
Hardwoods	
Aspen	.27
Other hardwoods	.27

Bole weight for trees 5 inches d.b.h. and larger was computed as follows:

$$BBM_{ij} = BV_{ij} \cdot WD_j \cdot B_j \qquad (1)$$

where:

BBM_{ij} = ovendry bole weight in pounds from a 1-foot stump to a 4-inch top diameter for trees in the *i*th diameter class, and for the *j*th species

BV_{ij} = cubic foot bole volume inside bark in cubic feet from a 1-foot stump to a 4-inch top diameter for trees in the *i*th diameter class, and the *j*th species

WD_j = ovendry wood density in pounds per cubic foot for trees in the *j*th species (table 1)

B_j = bark factor for *j*th species (table 2).

Weight of tops and branches.—Top and branch weight was estimated from prediction equations developed from Brown's (1978) data (table 3). Brown determined the weight of the tops and branches, including bark, for 98 trees including Douglas-fir (*Pseudotsuga menziesii* [Mirb.] Franco), Engelmann spruce (*Picea engelmannii* Parry), grand fir

(*Abies grandis* [Dougl.] Lindl.), lodgepole pine, ponderosa pine (*Pinus ponderosa* Laws.), subalpine fir, western hemlock (*Tsuga heterophylla* [Raf.] Sarg.), western larch (*Larix occidentalis* Nutt.), western redcedar (*Thuja plicata* Donn), western white pine (*Pinus monticola* Dougl.), and whitebark pine (*Pinus albicaulis* Engelm.). For the most part, sampled trees were less than 15 inches d.b.h. There were, however, some trees as large as 38 inches d.b.h. sampled in ponderosa pine, Douglas-fir, and western redcedar.

Table 3.—Top and branch weight per tree by species group and diameter class

D.b.h. class	Pines[1]	Other softwoods[2]	Hardwoods[3]
	Pounds per tree ovendry		
6	46.25	37.68	11.29
8	47.81	61.43	28.79
10	74.70	90.80	59.31
12	126.92	125.80	102.07
14	204.46	166.42	151.29
16	307.33	212.67	198.63
18	435.53	264.54	237.03
20	589.06	322.04	263.23
22	767.91	385.16	277.89
24	972.09	453.90	284.12
26	1201.60	528.28	285.71
28	1456.43	608.27	285.80
30	1736.59	693.89	285.80

[1]Includes ponderosa pine and white pine; and lodgepole pine to 12-inch d.b.h.

[2]Includes all other softwoods and lodgepole pine 14 inches d.b.h. and larger.

[3]Includes all hardwoods.

Because there were limited samples within each species, only two regression equations were developed from Brown's data. In addition, scatter diagrams of top and branch weight over d.b.h. indicated that two models would essentially include all observations. The pines were combined, and all other conifers were combined for the following equations:

Pines:

$$TB = 193.5 - 43.5412 \cdot D + 3.1659 \cdot D^2 \qquad (2)$$

$R^2 = 0.96$
Mean = 479 lb
Standard deviation = 143 lb

where:
TB = ovendry top, branch, and bark weight in pounds for ponderosa pine, white pine, and lodgepole pine < 14 inches d.b.h.
D = diameter in inches at 4.5 feet.

Other conifers:

$$TB = 0.191 + 2.0304 \cdot D + 0.7031 \cdot D^2 \qquad (3)$$

$R^2 = 0.88$
Mean = 156 lb
Standard deviation = 71 lb

where:
TB = ovendry top, branch, and bark weight in pounds for all Rocky Mountain conifers other than pines, with one exception: lodgepole pine > 14 inches d.b.h. was included in this group.
D = diameter in inches at 4.5 feet.

The weight of tops and branches for hardwoods was computed using Bartos and Johnston's (1978) aspen equation:

$$TB = (129.69 \cdot K - 0.05) \cdot (2.2046) \qquad (4)$$

where:
TB = ovendry top, branch, and bark weight in pounds for aspen and all other Rocky Mountain hardwoods

$$K = \exp^{-\left|\frac{\frac{D}{27.56} - 1}{0.56}\right|^{3.5}}$$

D = diameter in inches at 4.5 feet.

The weights by diameter class developed by regression equations are presented in table 3 and were used to compute top and branch weight in the following way:

$$TBBM_{ij} = N_{ij} \cdot TB_{ij} \qquad (5)$$

where:
$TBBM_{ij}$ = ovendry weight in pounds. Includes top wood and bark from a 4-inch diameter to the tip of the tree, and all branch material up to 1/4-inch diameter, for all trees in the *i*th diameter class, and for the *j*th species
TB_{ij} = ovendry weight of tops and branches, including bark, for trees in the *i*th diameter class, and for the *j*th species (table 3)
N_{ij} = number of trees in the *i*th diameter class, and for the *j*th species.

Brown's (1978) data were used to derive weight estimates for small conifers. Weights were graphed by d.b.h. for 234 trees of 12 species from Idaho and Montana. Weights for 2- and 4-inch diameter classes were interpolated from these graphs (table 4).

Bartos and Johnston's (1978) aspen equation was used to determine hardwood top and branch weight:

$$TB = (713.05 \cdot K - 0.28) \cdot (2.2046) \qquad (6)$$

where:

$$K = \exp^{-\left|\frac{\frac{D}{27.56} - 1}{0.56}\right|^{3.5}}$$

D = diameter at 4.5 feet in inches
TB = ovendry top and branch in pounds for aspen and all other Rocky Mountain hardwoods.

The weights that were developed by diameter class are listed in table 4, and were used to compute whole tree weights in the following way:

$$TBBM_{ij} = N_{ij} \cdot TB_{ij} \quad (7)$$

where:

$TBBM_{ij}$ = ovendry weight in pounds. Includes wood and bark in main stem from 1-foot stump to top of the tree, and branch material up to 1/4-inch diameter, for trees in the *i*th diameter class, and for the *j*th species

N_{ij} = number of trees less than 5.0 inches d.b.h. in the *i*th diameter class and for the *j*th species

TB_{ij} = ovendry weight in pounds for trees in the *i*th diameter class, and for the *j*th species.

Table 4.—Individual weights for small trees by diameter class and species

Species	Two-inch d.b.h. class	Four-inch d.b.h. class
	Pounds/tree ovendry	
Softwoods		
True fir		
Subalpine fir	11	43
Grand fir	10	43
Western redcedar	9	38
Western hemlock	10	38
Western larch	10	50
Lodgepole pine	10	40
Ponderosa pine	10	40
Western white pine	9	42
Engelmann spruce	12	43
Douglas-fir	11	49
Other softwoods	10	43
Hardwoods		
All	4	19

DISCUSSION

The information presented in this paper can be used in making various approximations. For example, the summaries presented in appendix B can be used as current estimates of the weight for the standing resource by species and diameter and by ownership and type of timber for each State in the Rocky Mountain Region. These data also can be used to develop additional factors that can in turn be applied to other resource estimates. As an example, by applying the factors derived from the data in appendix B to the estimate of growth, mortality, and removals presented in appendix 3 of the recent timber situation analysis (USDA 1982), the latter data would be converted to weight estimates.

Factors for determining the proportion of tree weight contributed by tree component in the Northern Rocky Mountains can be determined from table B-10 (appendix B.) Factors for Douglas-fir, which has a total dry weight of 351.6 million tons, would be computed as follows:

Bole factor = (279.1/351.6) · 100
= 79 percent

Top factor = (72.4/351.6) · 100
= 21 percent

Probably a more useful factor to apply to resource statistics would be top and limb weight as a percent of merchantable bole weight. Again using the estimates for Douglas-fir found in table B-10, appendix B, this factor would be computed as:

Top/bole factor = (72.4/279.1) · 100
= 26 percent

In other words, total measurable tree weight (bole, tops, and limbs) is 131 percent of merchantable bole weight.

Under the assumption that stand dynamics are such that this relationship of top weight to bole weight will not change in 1 year's time, this factor can be applied to the growth data for Douglas-fir in the Northern Rocky Mountains—298 million cubic feet[1]—to obtain an estimate of total additional fiber potentially available for fuel as follows:

Net annual growth

Merchantable section = (298 mm ft^3 · 28.08[2] lb/ft^3)
= 8,368 million lb

Top, limbs, etc. = 8,368 million lb · 0.26
= 2,175 million lb

Total potential for fuel = 8,368 million lb + 2,175 million lb
= 10,543 million lb
= 5.3 million tons

Similar factors can be generalized for just softwoods and hardwoods, and for growing stock, rough and rotten culls, and small trees.

The resource summaries presented in appendix B are based on net volumes for growing stock and rough and rotten culls, and are therefore conservative when considered for fiber or fuel potential. By Forest Survey standards a tree can have up to two-thirds of its total volume in cull material and still be classified as growing stock. A rough cull will have two-thirds or more of its total volume in cull material, of which less than half is missing or rotten. The solid cull material is usually severe sweep, crook, or forks that could be easily utilized for fuel. In either case the cull material is deducted from the total gross tree volume. Thus, use of factors developed from the summaries presented in appendix B would very likely underestimate the weight of material potentially available for fuel.

[1]Table 37, appendix 3 (USDA 1982).

[2]Wood density factor for Douglas-fir from table 1.

MANAGEMENT IMPLICATIONS

Summaries like those presented in this report would have greater utility, if they were based on individual tree predictions, rather than State aggregations. At a minimum, this would provide for developing subregional tabulations that would be of greater use to resource managers. Using individual trees as a basis for developing summaries would also make it possible to produce gross rather than net estimates. As alluded to above, a growing stock tree can have up to two-thirds of its volume in missing or cull material. The ability to include this material in estimates of the resource would certainly provide a more accurate assessment of the wood fiber potential within the area of concern.

The use of individual tree attributes rather than data aggregations would also allow the resource manager to use more sophisticated models for predicting wood fiber potential. In this report, model selection was restricted to those that could predict weight based on diameter. Models do exist, however, that include other tree attributes as well.

The summaries presented here also do not include estimates of the wood fiber potential from lands that are not considered commercial timberland. Latest statistics for the Rocky Mountain States indicate that there are some 69 million acres of other forest lands, plus 11 million acres of productive forest land set aside for some use other than timber harvest. No volume or weight estimates are currently available for these lands. The other forest lands are going to be especially important in the future as a source of fiber for fuel. For example, in some of the Rocky Mountain States the value of pinyon pine (*Pinus edulis* Engel. and *Pinus monophylla* Torr. & Frém.) and juniper (*Juniperus* spp.) species for fuelwood now exceeds the value of most "commercial" species for conversion to forest products.

To fully evaluate the wood fiber situation in the Rocky Mountain States, and the nation as a whole, resource specialists must broaden their inventories to include all lands supporting woody vegetation. At the same time, more research must be directed at developing regionalized models for predicting tree component weight and volume estimates for all trees, including those that have not been of commercial value.

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APPENDIX A: GLOSSARY

Bureau of Land Management land—Federal lands administered by the Bureau of Land Management, U.S. Department of the Interior.

Commercial species—Tree species suitable for industrial wood products.

Commercial timberland—Forest land which is producing or is capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. (Note: Areas qualifying as commercial timber-land have the capability of producing in excess of 20 cubic feet per acre per year of industrial wood in natural stands. Currently, inaccessible and inoperable areas are included.)

Cord—A pile of stacked wood containing 128 cubic feet within its outside surfaces. The standard dimensions are 4 by 4 by 8 feet.

Cull trees—Live trees of sawtimber and poletimber size that are unmerchantable for saw logs now or prospectively because of roughness, rot, or species (also see rotten trees and rough trees).

Deferred forest land—National Forest lands that meet productivity standards for commercial forest, but are under study for possible inclusion in the Wilderness System.

Diameter classes—A classification of trees based on diameter outside bark measured at breast height (4½ feet above the ground). D.b.h. is the common abbreviation for "diameter at breast height." When using 2-inch diameter classes the 6-inch class, for example, includes trees 5.0 through 6.9 inches d.b.h. inclusive.

Farmer and other private—All private ownerships except industry.

Farmer-owned lands—Lands owned by a person who operates a farm, either doing the work himself or directly supervising the work.

Forest industry lands—Lands owned by companies or individuals operating wood-processing plants.

Forest land—Land at least 10 percent stocked by forest trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated. (Also see Commercial timberland, Productive-reserved forest land, and Other forest land.) Forest land includes transition zones, such as areas between heavily forested and nonforested lands that are at least 10 percent stocked with forest trees, and forest areas adjacent to urban and built-up lands. Also included are pinyon-juniper and chaparral areas in the West, and afforested areas. The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width at least 120 feet wide to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest if less than 120 feet in width.

Growing-stock trees—Live sawtimber trees, poletimber trees, saplings, and seedlings meeting specified standards of quality or vigor; excludes cull trees.

Growing-stock volume—Net volume in cubic feet of live sawtimber and poletimber trees from stump to a minimum 4-inch top (of central stem) outside bark or to the point where the central stem breaks into limbs.

Growth—See definition for "Net annual growth."

Hardwoods—Dicotyledonous trees, usually broadleaved and deciduous.

Indian lands—Tribal lands held in fee by the Federal Government but administered for Indian tribal groups, and Indian trust allotments.

Industrial wood—All commercial roundwood products except fuelwood.

Land area—Census definition: The area of dry land and land temporarily or partially covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 1/8 of a statute mile in width; and lakes, reservoirs, and ponds less than 40 acres of area.
Forest Survey definition: Same as above except minimum width of streams, etc., is 120 feet and minimum size of lakes, etc., is 1 acre.

Logging residues—The unused portions of poletimber and sawtimber trees cut or killed by logging.

Mortality—The volume of sound wood in live trees that have died from natural causes during a specified period.

National Forest System land—Federal lands designated by Executive Order or statute as National Forests or purchase units, and other lands under the administration of the Forest Service including experimental areas and Bankhead-Jones Title III lands.

Net annual growth—The net increase in the volume of trees during a specified year. Components of net annual growth include the increment in net volume of trees at the beginning of the specific year surviving to its end, plus the net volume of trees reaching the minimum size class during the year, minus the volume of trees that died during the year, and minus the net volume of trees that became rough or rotten trees during the year.

Nonforest land—Land that has never supported forests and lands formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 40-acre areas of water classified by the Bureau of the Census as nonforest land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide, and clearings, etc., more than 1 acre in size, to qualify as nonforest land.)

Other Federal land—Federal land other than lands administered by the Forest Service or the Bureau of Land Management.

Other forest land—Forest land incapable of producing 20 cubic feet per acre of industrial wood under natural conditions because of adverse site conditions such as sterile soils, dry climate, poor drainage, high elevation, steepness, or rockiness.

Other land—All land area other than forest and range lands.

Other private land—Privately owned land other than forest industry or farmer-owned.

Other public land—Publicly owned land other than National Forest System land.

Other species—Tree species of typical small size, poor form, or inferior quality which normally do not develop into trees suitable for industrial wood products.

Ownership—The property owned by one owner, including all parcels of land in the United States.

Plant byproducts—Wood material from primary manufacturing plants (such as slabs, edgings, trimmings, miscuts, sawdust shavings, veneer cores and clippings, and pulp screenings) that are used for some products.

Poletimber trees—Live trees of commercial species at least 5.0 inches in diameter breast height but smaller than sawtimber size, and of good form and vigor.

Productive-reserved forest land—Productive public forest land withdrawn from timber utilization through statute or administrative regulations.

Removals—The net volume of growing-stock or sawtimber trees removed from the inventory by harvesting; cultural operations, such as timber stand improvement; land clearings; or changes in land use.

Residues—

Coarse residues—Plant residues suitable for chipping, such as slabs, edgings, and ends.

Fine residues—Plant residues not suitable for chipping, such as sawdust, shavings, and veneer clippings.

Logging residues—The unused portions of sawtimber and poletimber trees cut or killed by logging.

Plant residues—Wood materials from primary manufacturing plants that are not used for any product.

Urban residues—Wood materials from urban areas, such as newspapers, lumber and plywood from building demolition, and used packaging and shipping wood materials.

Rotten trees—Live trees of commercial species that do not contain a saw log now or prospectively, primarily because of rot (e.g., when rot accounts for more than 50 percent of the total cull volume).

Rough trees—(a) Live trees of commercial species that do not contain a saw log, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Salvable dead trees—Standing or down dead trees that are considered currently or potentially merchantable by regional standards.

Saw log—A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods) or other combinations of size and defect specified by regional standards.

Saw log portion—That part of the bole of sawtimber trees between the stump and the saw log top.

Saw log top—The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw log top is 7.0 inches d.o.b. for softwoods, and 9.0 inches d.o.b. for hardwoods.

Sawtimber trees—Live trees of commercial species containing at least one 12-foot saw log or two noncontiguous 8-foot logs, and meeting regional specifications for freedom from defect. Softwood trees must be at least 9 inches in diameter and hardwood trees 11 inches in diameter at breast height.

Small trees—Live trees of commercial species 1.0 inch to 5.0 inches in diameter at breast height and of good form and vigor.

Softwoods—Coniferous trees, usually evergreen, having needle or scalelike leaves.

State, county, and municipal lands—Lands owned by States, counties, and local public agencies, or lands leased by these governmental units for more than 50 years.

Upper-stem portion—That part of the main stem or fork of sawtimber trees above the saw log top to a minimum top diameter of 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Table B-1.—Dry weight of growing stock by species, tree component, and diameter class, Arizona, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS									
		6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons										
DOUGLAS-FIR											
BOLE	5,194	263	265	332	367	448	442	439	377	1,275	986
TOP	1,429	147	128	126	128	129	124	111	89	300	147
TOTAL	6,623	410	393	458	495	577	566	550	466	1,575	1,133
PONDEROSA PINE											
BOLE	54,207	2,020	2,521	3,529	4,142	4,431	4,727	5,343	5,194	17,432	4,868
TOP	24,718	2,262	1,538	1,652	1,772	1,834	1,924	2,123	2,102	7,603	1,908
TOTAL	78,925	4,282	4,059	5,181	5,914	6,265	6,651	7,466	7,296	25,035	6,776
TRUE FIRS											
BOLE	2,957	108	136	293	259	365	311	223	246	566	450
TOP	881	71	96	122	92	106	76	55	55	134	74
TOTAL	3,838	179	232	415	351	471	387	278	301	700	524
ENGELMANN SPRUCE											
BOLE	3,424	123	164	195	444	469	547	383	427	583	89
TOP	1,287	87	149	137	201	173	162	105	99	154	20
TOTAL	4,711	210	313	332	645	642	709	488	526	737	109
WESTERN LARCH											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN RED CEDAR											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
OTHER SOFTWOODS											
BOLE	811	41	68	48	95	76	74	76	66	184	83
TOP	308	58	34	19	35	25	26	22	19	55	15
TOTAL	1,119	99	102	67	130	101	100	98	85	239	98
TOTAL SOFTWOODS											
BOLE	66,593	2,555	3,154	4,397	5,307	5,789	6,101	6,464	6,310	20,040	6,476
TOP	28,623	2,625	1,945	2,056	2,228	2,267	2,312	2,416	2,364	8,246	2,164
TOTAL	95,216	5,180	5,099	6,453	7,535	8,056	8,413	8,880	8,674	28,286	8,640
ASPEN & COTTONWOOD											
BOLE	3,044	386	447	467	540	444	294	226	127	112	1
TOP	728	60	92	120	145	126	82	57	26	20	0
TOTAL	3,772	446	539	587	685	570	376	283	153	132	1
OTHER HARDWOODS											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
TOTAL HARDWOODS											
BOLE	3,044	386	447	467	540	444	294	226	127	112	1
TOP	728	60	92	120	145	126	82	57	26	20	0
TOTAL	3,772	446	539	587	685	570	376	283	153	132	1
TOTAL ALL SPECIES											
BOLE	69,637	2,941	3,601	4,864	5,847	6,233	6,395	6,690	6,437	20,152	6,477
TOP	29,351	2,685	2,037	2,176	2,373	2,393	2,394	2,473	2,390	8,266	2,164
TOTAL	98,988	5,626	5,638	7,040	8,220	8,626	8,789	9,163	8,827	28,418	8,641

Table B-2.—Dry weight of growing stock by species, tree component, and diameter class, Colorado, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS									
		6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons										
DOUGLAS-FIR											
BOLE	18,325	3,659	2,129	2,020	1,721	1,651	1,756	1,352	1,147	2,170	720
TOP	5,648	787	962	941	701	562	501	346	264	475	109
TOTAL	23,973	4,446	3,091	2,961	2,422	2,213	2,257	1,698	1,411	2,645	829
PONDEROSA PINE											
BOLE	12,569	669	934	1,016	1,587	1,597	1,314	1,009	1,069	2,610	764
TOP	7,460	995	671	645	885	838	691	517	546	1,397	275
TOTAL	20,029	1,664	1,605	1,661	2,472	2,435	2,005	1,526	1,615	4,007	1,039
TRUE FIRS											
BOLE	24,033	4,384	4,038	3,762	3,070	2,387	2,059	1,567	974	1,533	259
TOP	8,571	1,490	1,733	1,610	1,141	795	620	438	249	438	57
TOTAL	32,604	5,874	5,771	5,372	4,211	3,182	2,679	2,005	1,223	1,971	316
ENGELMANN SPRUCE											
BOLE	61,680	4,737	5,260	6,879	7,563	7,479	7,241	6,270	4,801	9,911	1,539
TOP	17,532	1,793	2,191	2,579	2,381	2,048	1,757	1,408	991	2,118	266
TOTAL	79,212	6,530	7,451	9,458	9,944	9,527	8,998	7,678	5,792	12,029	1,805
WESTERN LARCH											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN RED CEDAR											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE											
BOLE	39,276	9,850	8,384	7,352	5,951	4,053	1,985	1,029	460	212	0
TOP	11,062	3,494	2,291	1,848	1,612	995	461	218	91	52	0
TOTAL	50,338	13,344	10,675	9,200	7,563	5,048	2,446	1,247	551	264	0
OTHER SOFTWOODS											
BOLE	1,505	404	211	240	172	167	105	94	57	55	0
TOP	631	112	109	126	90	74	43	35	18	24	0
TOTAL	2,136	516	320	366	262	241	148	129	75	79	0
TOTAL SOFTWOODS											
BOLE	157,388	23,703	20,956	21,269	20,064	17,334	14,460	11,321	8,508	16,491	3,282
TOP	50,904	8,671	7,957	7,749	6,810	5,312	4,073	2,962	2,159	4,504	707
TOTAL	208,292	32,374	28,913	29,018	26,874	22,646	18,533	14,283	10,667	20,995	3,989
ASPEN & COTTONWOOD											
BOLE	33,284	4,696	8,960	8,023	5,152	2,969	1,656	940	483	405	0
TOP	6,993	1,205	1,607	1,656	1,141	675	370	190	88	61	0
TOTAL	40,277	5,901	10,567	9,679	6,293	3,644	2,026	1,130	571	466	0
OTHER HARDWOODS											
BOLE	18	0	4	8	6	0	0	0	0	0	0
TOP	6	0	1	2	3	0	0	0	0	0	0
TOTAL	24	0	5	10	9	0	0	0	0	0	0
TOTAL HARDWOODS											
BOLE	33,302	4,696	8,964	8,031	5,158	2,969	1,656	940	483	405	0
TOP	6,999	1,205	1,608	1,658	1,144	675	370	190	88	61	0
TOTAL	40,301	5,901	10,572	9,689	6,302	3,644	2,026	1,130	571	466	0
TOTAL ALL SPECIES											
BOLE	190,690	28,399	29,920	29,300	25,222	20,303	16,116	12,261	8,991	16,896	3,282
TOP	57,903	9,876	9,565	9,407	7,954	5,987	4,443	3,152	2,247	4,565	707
TOTAL	248,593	38,275	39,485	38,707	33,176	26,290	20,559	15,413	11,238	21,461	3,989

Table B-3.—Dry weight of growing stock by species, tree component, and diameter class, Idaho, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS									
		6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons										
DOUGLAS-FIR											
BOLE	138,161	6,041	9,386	12,303	13,829	16,406	14,163	12,446	11,124	29,108	13,355
TOP	30,779	2,986	3,456	3,685	3,508	3,607	2,791	2,275	1,882	4,838	1,751
TOTAL	168,940	9,027	12,842	15,988	17,337	20,013	16,954	14,721	13,006	33,946	15,106
PONDEROSA PINE											
BOLE	43,469	597	1,057	2,002	2,681	3,275	2,936	2,712	2,395	10,817	14,997
TOP	14,194	917	587	727	955	1,111	1,029	921	808	3,530	3,609
TOTAL	57,663	1,514	1,644	2,729	3,636	4,386	3,965	3,633	3,203	14,347	18,606
TRUE FIRS											
BOLE	85,408	5,269	8,057	9,763	9,559	9,356	8,353	7,503	5,856	14,520	7,172
TOP	22,212	3,345	3,307	3,196	2,532	2,198	1,760	1,454	1,054	2,494	872
TOTAL	107,620	8,614	11,364	12,959	12,091	11,554	10,113	8,957	6,910	17,014	8,044
ENGELMANN SPRUCE											
BOLE	24,659	656	1,233	1,676	2,142	2,519	2,584	2,533	2,486	6,383	2,447
TOP	5,637	412	527	545	571	595	542	482	440	1,188	335
TOTAL	30,296	1,068	1,760	2,221	2,713	3,114	3,126	3,015	2,926	7,571	2,782
WESTERN LARCH											
BOLE	26,494	2,005	2,951	3,188	2,935	2,919	2,330	2,043	1,615	4,406	2,102
TOP	5,220	799	897	778	584	511	373	292	209	591	186
TOTAL	31,714	2,804	3,848	3,966	3,519	3,430	2,703	2,335	1,824	4,997	2,288
WESTERN HEMLOCK											
BOLE	16,863	730	1,421	1,904	1,835	2,080	1,793	1,681	1,293	2,834	1,292
TOP	3,872	529	525	522	433	403	303	285	213	478	181
TOTAL	20,735	1,259	1,946	2,426	2,268	2,483	2,096	1,966	1,506	3,312	1,473
WESTERN WHITE PINE											
BOLE	24,233	609	1,418	1,631	2,410	2,050	2,332	2,485	2,323	6,255	2,720
TOP	6,460	322	354	338	515	470	562	611	586	1,947	755
TOTAL	30,693	931	1,772	1,969	2,925	2,520	2,894	3,096	2,909	8,202	3,475
WESTERN RED CEDAR											
BOLE	21,341	930	1,373	1,853	1,956	2,065	1,728	1,742	1,754	4,312	3,628
TOP	6,472	550	679	740	668	677	490	490	443	1,125	610
TOTAL	27,813	1,480	2,052	2,593	2,624	2,742	2,218	2,232	2,197	5,437	4,238

LODGEPOLE PINE											
BOLE	51,209	9,024	13,391	12,206	8,174	4,280	2,280	1,104	378	360	12
TOP	15,025	5,112	3,445	2,706	1,994	935	482	205	70	75	1
TOTAL	66,234	14,136	16,836	14,912	10,168	5,215	2,762	1,309	448	435	13
OTHER SOFTWOODS											
BOLE	4,827	804	2,354	288	268	305	340	128	134	158	48
TOP	885	141	155	128	107	103	105	33	50	51	12
TOTAL	5,712	945	2,509	416	375	408	445	161	184	209	60
TOTAL SOFTWOODS											
BOLE	436,664	26,665	42,641	46,814	45,789	45,255	38,839	34,377	29,358	79,153	47,773
TOP	110,756	15,113	13,932	13,365	11,867	10,610	8,437	7,048	5,755	16,317	8,312
TOTAL	547,420	41,778	56,573	60,179	57,656	55,865	47,276	41,425	35,113	95,470	56,085
ASPEN & COTTONWOOD											
BOLE	1,953	216	288	266	295	236	150	115	84	201	102
TOP	495	49	95	83	78	65	40	27	17	32	9
TOTAL	2,448	265	383	349	373	301	190	142	101	233	111
OTHER HARDWOODS											
BOLE	1,159	491	292	204	58	23	2	11	0	11	67
TOP	120	34	24	33	20	6	0	1	0	1	1
TOTAL	1,279	525	316	237	78	29	2	12	0	12	68
TOTAL HARDWOODS											
BOLE	3,112	707	580	470	353	259	152	126	84	212	169
TOP	615	83	119	116	98	71	40	28	17	33	10
TOTAL	3,727	790	699	586	451	330	192	154	101	245	179
TOTAL ALL SPECIES											
BOLE	439,776	27,372	43,221	47,284	46,142	45,514	38,991	34,503	29,442	79,365	47,942
TOP	111,371	15,196	14,051	13,481	11,965	10,681	8,477	7,076	5,772	16,350	8,322
TOTAL	551,147	42,568	57,272	60,765	58,107	56,195	47,468	41,579	35,214	95,715	56,264

Table B-4.—Dry weight of growing stock by species, tree component, and diameter class, Montana, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS									
		6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons										
DOUGLAS-FIR											
BOLE	131,147	10,022	14,764	16,611	17,470	16,882	14,357	11,979	9,647	16,090	3,325
TOP	38,919	5,211	5,963	5,764	5,504	4,589	3,588	2,691	2,017	3,111	481
TOTAL	170,066	15,233	20,727	22,375	22,974	21,471	17,945	14,670	11,664	19,201	3,806
PONDEROSA PINE											
BOLE	33,370	1,859	2,723	3,262	3,909	3,641	3,607	2,962	2,667	6,199	2,541
TOP	14,869	1,376	1,214	1,120	1,442	1,524	1,553	1,352	1,212	3,252	824
TOTAL	48,239	3,235	3,937	4,382	5,351	5,165	5,160	4,314	3,879	9,451	3,365
TRUE FIRS											
BOLE	24,571	3,975	5,060	4,739	3,642	2,759	1,773	1,113	621	812	77
TOP	10,415	2,846	2,524	1,874	1,201	829	475	281	147	221	17
TOTAL	34,986	6,821	7,584	6,613	4,843	3,588	2,248	1,394	768	1,033	94
ENGELMANN SPRUCE											
BOLE	24,462	1,369	2,186	2,791	3,200	3,054	2,935	2,416	1,797	3,687	1,027
TOP	7,723	1,084	1,037	1,026	994	877	754	569	401	808	173
TOTAL	32,185	2,453	3,223	3,817	4,194	3,931	3,689	2,985	2,198	4,495	1,200
WESTERN LARCH											
BOLE	37,356	2,526	3,191	3,881	3,827	3,685	3,460	3,254	3,046	7,528	2,958
TOP	10,639	1,758	1,312	1,348	1,147	980	844	725	616	1,493	416
TOTAL	47,995	4,284	4,503	5,229	4,974	4,665	4,304	3,979	3,662	9,021	3,374
WESTERN HEMLOCK											
BOLE	4,715	279	681	467	594	435	516	342	279	893	229
TOP	1,261	226	248	139	143	112	107	61	49	145	31
TOTAL	5,976	505	929	606	737	547	623	403	328	1,038	260
WESTERN WHITE PINE											
BOLE	3,283	122	228	411	429	411	310	250	330	577	215
TOP	1,264	123	89	133	154	136	110	85	109	247	78
TOTAL	4,547	245	317	544	583	547	420	335	439	824	293
WESTERN RED CEDAR											
BOLE	3,185	366	411	308	348	287	186	128	175	454	522
TOP	1,629	356	255	184	179	129	87	48	63	190	138
TOTAL	4,814	722	666	492	527	416	273	176	238	644	660

LODGEPOLE PINE											
BOLE	116,577	29,090	34,757	25,287	15,097	7,373	3,081	1,110	505	271	6
TOP	37,213	15,902	8,896	6,068	3,706	1,641	626	222	89	62	1
TOTAL	153,790	44,992	43,653	31,355	18,803	9,014	3,707	1,332	594	333	7
OTHER SOFTWOODS											
BOLE	9,753	1,098	1,836	1,993	1,801	1,207	726	457	264	316	55
TOP	3,379	557	690	681	558	360	221	126	74	102	10
TOTAL	13,132	1,655	2,526	2,674	2,359	1,567	947	583	338	418	65
TOTAL SOFTWOODS											
BOLE	388,419	50,706	65,837	59,750	50,317	39,734	30,951	24,011	19,331	36,827	10,955
TOP	127,311	29,439	22,228	18,337	15,028	11,177	8,365	6,160	4,777	9,631	2,169
TOTAL	515,730	80,145	88,065	78,087	65,345	50,911	39,316	30,171	24,108	46,458	13,124
ASPEN & COTTONWOOD											
BOLE	3,216	172	261	269	381	349	401	359	255	755	14
TOP	1,060	36	59	84	139	145	161	137	97	199	3
TOTAL	4,276	208	320	353	520	494	562	496	352	954	17
OTHER HARDWOODS											
BOLE	515	97	104	107	63	97	19	0	14	3	11
TOP	90	15	19	21	10	21	2	0	2	0	0
TOTAL	605	112	123	128	73	118	21	0	16	3	11
TOTAL HARDWOODS											
BOLE	3,731	269	365	376	444	446	420	359	269	758	25
TOP	1,150	51	78	105	149	166	163	137	99	199	3
TOTAL	4,881	320	443	481	593	612	583	496	368	957	28
TOTAL ALL SPECIES											
BOLE	392,150	50,975	66,202	60,126	50,761	40,180	31,371	24,370	19,600	37,585	10,980
TOP	128,461	29,490	22,306	18,442	15,177	11,343	8,528	6,297	4,876	9,830	2,172
TOTAL	520,611	80,465	88,508	78,568	65,938	51,523	39,899	30,667	24,476	47,415	13,152

Table B-5.—Dry weight of growing stock by species, tree component, and diameter class, Nevada, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS									
		6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons										
DOUGLAS-FIR											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
PONDEROSA PINE											
BOLE	1,212	6	24	41	65	79	102	111	106	353	325
TOP	516	22	18	18	27	32	42	47	46	167	97
TOTAL	1,728	28	42	59	92	111	144	158	152	520	422
TRUE FIRS											
BOLE	1,243	22	23	42	36	46	63	71	75	319	546
TOP	268	18	13	22	15	18	19	19	19	70	55
TOTAL	1,511	40	36	64	51	64	82	90	94	389	601
ENGELMANN SPRUCE											
BOLE	231	6	13	18	21	9	28	11	19	87	19
TOP	62	3	6	7	7	3	8	3	4	18	3
TOTAL	293	9	19	25	28	12	36	14	23	105	22
WESTERN LARCH											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE											
BOLE	150	1	2	1	3	5	5	4	8	45	76
TOP	64	1	1	0	1	3	2	2	4	23	27
TOTAL	214	2	3	1	4	8	7	6	12	68	103
WESTERN RED CEDAR											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE											
BOLE	261	4	12	19	26	31	25	17	24	72	31
TOP	75	3	4	6	10	10	6	5	5	20	6
TOTAL	336	7	16	25	36	41	31	22	29	92	37
OTHER SOFTWOODS											
BOLE	245	18	7	6	10	7	13	25	13	78	68
TOP	76	10	4	3	4	3	5	8	5	23	11
TOTAL	321	28	11	9	14	10	18	33	18	101	79
TOTAL SOFTWOODS											
BOLE	3,342	57	81	127	161	177	236	239	245	954	1,065
TOP	1,061	57	46	56	64	69	82	84	83	321	199
TOTAL	4,403	114	127	183	225	246	318	323	328	1,275	1,264
ASPEN & COTTONWOOD											
BOLE	178	41	30	29	53	23	1	1	0	0	0
TOP	50	7	6	9	19	9	0	0	0	0	0
TOTAL	228	48	36	38	72	32	1	1	0	0	0
OTHER HARDWOODS											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
TOTAL HARDWOODS											
BOLE	178	41	30	29	53	23	1	1	0	0	0
TOP	50	7	6	9	19	9	0	0	0	0	0
TOTAL	228	48	36	38	72	32	1	1	0	0	0
TOTAL ALL SPECIES											
BOLE	3,520	98	111	156	214	200	237	240	245	954	1,065
TOP	1,111	64	52	65	83	78	82	84	83	321	199
TOTAL	4,631	162	163	221	297	278	319	324	328	1,275	1,264

Table B-6.—Dry weight of growing stock by species, tree component, and diameter class, New Mexico, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS									
		6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons										
DOUGLAS-FIR											
BOLE	15,496	1,206	1,414	1,203	1,458	1,702	1,512	1,449	1,411	2,900	1,241
TOP	5,372	730	836	698	600	643	406	341	321	624	173
TOTAL	20,868	1,936	2,250	1,901	2,058	2,345	1,918	1,790	1,732	3,524	1,414
PONDEROSA PINE											
BOLE	47,494	2,397	2,647	2,390	3,279	3,843	5,864	6,032	5,347	13,610	2,085
TOP	17,969	2,539	1,501	1,398	1,408	1,520	1,773	1,743	1,426	4,106	555
TOTAL	65,463	4,936	4,148	3,788	4,687	5,363	7,637	7,775	6,773	17,716	2,640
TRUE FIRS											
BOLE	8,692	1,344	906	996	1,089	976	801	658	455	1,117	350
TOP	2,876	485	391	455	387	321	216	154	110	289	68
TOTAL	11,568	1,829	1,297	1,451	1,476	1,297	1,017	812	565	1,406	418
ENGELMANN SPRUCE											
BOLE	6,843	630	628	814	997	797	929	791	481	706	70
TOP	2,466	335	307	458	404	256	245	193	97	155	16
TOTAL	9,309	965	935	1,272	1,401	1,053	1,174	984	578	861	86
WESTERN LARCH											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN RED CEDAR											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
OTHER SOFTWOODS											
BOLE	2,211	222	345	175	434	291	264	110	127	196	47
TOP	901	97	172	95	207	134	69	30	37	53	7
TOTAL	3,112	319	517	270	641	425	333	140	164	249	54
TOTAL SOFTWOODS											
BOLE	80,736	5,799	5,940	5,578	7,257	7,609	9,370	9,040	7,821	18,529	3,793
TOP	29,584	4,186	3,207	3,104	3,006	2,874	2,709	2,461	1,991	5,227	819
TOTAL	110,320	9,985	9,147	8,682	10,263	10,483	12,079	11,501	9,812	23,756	4,612
ASPEN & COTTONWOOD											
BOLE	8,308	1,412	1,663	1,507	1,317	909	672	447	247	134	0
TOP	1,688	192	297	330	317	226	160	95	48	23	0
TOTAL	9,996	1,604	1,960	1,837	1,634	1,135	832	542	295	157	0
OTHER HARDWOODS											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
TOTAL HARDWOODS											
BOLE	8,308	1,412	1,663	1,507	1,317	909	672	447	247	134	0
TOP	1,688	192	297	330	317	226	160	95	48	23	0
TOTAL	9,996	1,604	1,960	1,837	1,634	1,135	832	542	295	157	0
TOTAL ALL SPECIES											
BOLE	89,044	7,211	7,603	7,085	8,574	8,518	10,042	9,487	8,068	18,663	3,793
TOP	31,272	4,378	3,504	3,434	3,323	3,100	2,869	2,556	2,039	5,250	819
TOTAL	120,316	11,589	11,107	10,519	11,897	11,618	12,911	12,043	10,107	23,913	4,612

Table B-7.—Dry weight of growing stock by species, tree component, and diameter class, western South Dakota, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS									
		6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons										
DOUGLAS-FIR											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
PONDEROSA PINE											
BOLE	22,080	1,786	3,283	3,977	3,822	3,197	2,394	1,643	1,033	921	24
TOP	8,121	1,761	1,157	1,112	1,105	977	748	530	336	385	10
TOTAL	30,201	3,547	4,440	5,089	4,927	4,174	3,142	2,173	1,369	1,306	34
TRUE FIRS											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
ENGELMANN SPRUCE											
BOLE	717	79	107	118	110	92	82	53	37	39	0
TOP	241	38	46	44	35	26	21	14	8	9	0
TOTAL	958	117	153	162	145	118	103	67	45	48	0
WESTERN LARCH											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN RED CEDAR											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
OTHER SOFTWOODS											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
TOTAL SOFTWOODS											
BOLE	22,797	1,865	3,390	4,095	3,932	3,289	2,476	1,696	1,070	960	24
TOP	8,362	1,799	1,203	1,156	1,140	1,003	769	544	344	394	10
TOTAL	31,159	3,664	4,593	5,251	5,072	4,292	3,245	2,240	1,414	1,354	34
ASPEN & COTTONWOOD											
BOLE	131	64	32	18	3	0	0	1	0	5	8
TOP	27	13	7	5	1	0	0	0	0	1	0
TOTAL	158	77	39	23	4	0	0	1	0	6	8
OTHER HARDWOODS											
BOLE	111	38	22	16	9	3	2	6	3	7	5
TOP	20	6	6	3	1	1	1	1	0	1	0
TOTAL	131	44	28	19	10	4	3	7	3	8	5
TOTAL HARDWOODS											
BOLE	242	102	54	34	12	3	2	7	3	12	13
TOP	47	19	13	8	2	1	1	1	0	2	0
TOTAL	289	121	67	42	14	4	3	8	3	14	13
TOTAL ALL SPECIES											
BOLE	23,039	1,967	3,444	4,129	3,944	3,292	2,478	1,703	1,073	972	37
TOP	8,409	1,818	1,216	1,164	1,142	1,004	770	545	344	396	10
TOTAL	31,448	3,785	4,660	5,293	5,086	4,296	3,248	2,248	1,417	1,368	47

Table B-8.—Dry weight of growing stock by species, tree component, and diameter class, Utah, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS									
		6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons										
DOUGLAS-FIR											
BOLE	10,133	810	832	815	1,008	1,114	1,252	1,128	940	1,591	643
TOP	3,019	340	442	358	357	321	309	272	190	341	89
TOTAL	13,152	1,150	1,274	1,173	1,365	1,435	1,561	1,400	1,130	1,932	732
PONDEROSA PINE											
BOLE	4,334	62	136	224	320	346	416	321	397	1,213	899
TOP	2,215	178	102	99	142	154	171	141	192	638	398
TOTAL	6,549	240	238	323	462	500	587	462	589	1,851	1,297
TRUE FIRS											
BOLE	9,584	1,263	1,266	1,403	1,242	1,035	795	799	487	932	362
TOP	3,877	789	639	641	481	378	259	236	138	253	63
TOTAL	13,461	2,052	1,905	2,044	1,723	1,413	1,054	1,035	625	1,185	425
ENGELMANN SPRUCE											
BOLE	10,424	763	997	1,069	1,163	1,237	1,021	1,055	799	1,796	524
TOP	3,353	431	460	437	412	380	280	256	188	416	93
TOTAL	13,777	1,194	1,457	1,506	1,575	1,617	1,301	1,311	987	2,212	617
WESTERN LARCH											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN RED CEDAR											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE											
BOLE	11,007	2,129	2,277	2,179	1,584	1,342	758	393	177	159	9
TOP	3,596	1,141	720	596	454	343	179	86	38	38	1
TOTAL	14,603	3,270	2,997	2,775	2,038	1,685	937	479	215	197	10
OTHER SOFTWOODS											
BOLE	731	104	61	96	59	80	94	57	33	131	16
TOP	232	24	15	34	20	28	33	17	11	46	4
TOTAL	963	128	76	130	79	108	127	74	44	177	20
TOTAL SOFTWOODS											
BOLE	46,213	5,131	5,569	5,786	5,376	5,154	4,336	3,753	2,833	5,822	2,453
TOP	16,292	2,903	2,378	2,165	1,866	1,604	1,231	1,008	757	1,732	648
TOTAL	62,505	8,034	7,947	7,951	7,242	6,758	5,567	4,761	3,590	7,554	3,101
ASPEN & COTTONWOOD											
BOLE	12,179	2,797	3,232	2,330	1,857	1,042	491	243	68	119	0
TOP	2,609	506	602	531	481	284	123	53	13	16	0
TOTAL	14,788	3,303	3,834	2,861	2,338	1,326	614	296	81	135	0
OTHER HARDWOODS											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
TOTAL HARDWOODS											
BOLE	12,179	2,797	3,232	2,330	1,857	1,042	491	243	68	119	0
TOP	2,609	506	602	531	481	284	123	53	13	16	0
TOTAL	14,788	3,303	3,834	2,861	2,338	1,326	614	296	81	135	0
TOTAL ALL SPECIES											
BOLE	58,392	7,928	8,801	8,116	7,233	6,196	4,827	3,996	2,901	5,941	2,453
TOP	18,901	3,409	2,980	2,696	2,347	1,888	1,354	1,061	770	1,748	648
TOTAL	77,293	11,337	11,781	10,812	9,580	8,084	6,181	5,057	3,671	7,689	3,101

Table B-9.—Dry weight of growing stock by species, tree component, and diameter class, Wyoming 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS									
		6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons										
DOUGLAS-FIR											
BOLE	9,819	1,007	754	1,559	885	960	831	800	721	1,750	552
TOP	2,737	467	329	469	253	238	188	176	144	374	99
TOTAL	12,556	1,474	1,083	2,028	1,138	1,198	1,019	976	865	2,124	651
PONDEROSA PINE											
BOLE	11,598	686	1,362	1,990	2,281	1,866	1,411	876	585	479	62
TOP	5,702	1,315	820	656	731	648	550	370	253	318	41
TOTAL	17,300	2,001	2,182	2,646	3,012	2,514	1,961	1,246	838	797	103
TRUE FIRS											
BOLE	9,004	1,677	1,660	1,701	1,160	915	702	574	242	354	19
TOP	3,534	772	728	694	422	312	218	171	81	131	5
TOTAL	12,538	2,449	2,388	2,395	1,582	1,227	920	745	323	485	24
ENGELMANN SPRUCE											
BOLE	18,722	972	1,332	1,523	2,002	2,126	2,198	1,907	1,742	3,834	1,086
TOP	5,315	513	597	571	608	588	568	439	390	848	193
TOTAL	24,037	1,485	1,929	2,094	2,610	2,714	2,766	2,346	2,132	4,682	1,279
WESTERN LARCH											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN RED CEDAR											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE											
BOLE	35,888	5,043	6,677	7,991	6,407	4,707	2,277	1,516	789	448	33
TOP	11,858	3,388	2,048	2,120	1,820	1,227	572	369	183	124	7
TOTAL	47,746	8,431	8,725	10,111	8,227	5,934	2,849	1,885	972	572	40
OTHER SOFTWOODS											
BOLE	4,313	236	559	660	840	678	456	314	205	321	44
TOP	1,498	123	267	234	278	206	135	91	56	96	12
TOTAL	5,811	359	826	894	1,118	884	591	405	261	417	56
TOTAL SOFTWOODS											
BOLE	89,344	9,621	12,344	15,424	13,575	11,252	7,875	5,987	4,284	7,186	1,796
TOP	30,644	6,578	4,789	4,744	4,112	3,219	2,231	1,616	1,107	1,891	357
TOTAL	119,988	16,199	17,133	20,168	17,687	14,471	10,106	7,603	5,391	9,077	2,153
ASPEN & COTTONWOOD											
BOLE	3,122	763	810	704	445	262	104	32	1	1	0
TOP	759	141	185	192	130	76	29	6	0	0	0
TOTAL	3,881	904	995	896	575	338	133	38	1	1	0
OTHER HARDWOODS											
BOLE	19	5	3	2	0	0	2	2	0	3	2
TOP	3	1	1	1	0	0	0	0	0	0	0
TOTAL	22	6	4	3	0	0	2	2	0	3	2
TOTAL HARDWOODS											
BOLE	3,141	768	813	706	445	262	106	34	1	4	2
TOP	762	142	186	193	130	76	29	6	0	0	0
TOTAL	3,903	910	999	899	575	338	135	40	1	4	2
TOTAL ALL SPECIES											
BOLE	92,485	10,389	13,157	16,130	14,020	11,514	7,981	6,021	4,285	7,190	1,798
TOP	31,406	6,720	4,975	4,937	4,242	3,295	2,260	1,622	1,107	1,891	357
TOTAL	123,891	17,109	18,132	21,067	18,262	14,809	10,241	7,643	5,392	9,081	2,155

Table B-10.—Dry weight of growing stock by species, tree component, and diameter class, Northern Rocky Mountains, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS									
		6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons										
DOUGLAS-FIR											
BOLE	279,127	17,070	24,904	30,473	32,184	34,248	29,351	25,225	21,492	46,948	17,232
TOP	72,435	8,664	9,748	9,918	9,265	8,434	6,567	5,142	4,043	8,323	2,331
TOTAL	351,562	25,734	34,652	40,391	41,449	42,682	35,918	30,367	25,535	55,271	19,563
PONDEROSA PINE											
BOLE	110,517	4,928	8,425	11,231	12,693	11,979	10,348	8,193	6,680	18,416	17,624
TOP	42,886	5,369	3,778	3,615	4,233	4,260	3,880	3,173	2,609	7,485	4,484
TOTAL	153,403	10,297	12,203	14,846	16,926	16,239	14,228	11,366	9,289	25,901	22,108
TRUE FIRS											
BOLE	118,983	10,921	14,777	16,203	14,361	13,030	10,828	9,190	6,719	15,686	7,268
TOP	36,161	6,963	6,559	5,764	4,155	3,339	2,453	1,906	1,282	2,846	894
TOTAL	155,144	17,884	21,336	21,967	18,516	16,369	13,281	11,096	8,001	18,532	8,162
ENGELMANN SPRUCE											
BOLE	68,560	3,076	4,858	6,108	7,454	7,791	7,799	6,909	6,062	13,943	4,560
TOP	18,916	2,047	2,207	2,186	2,208	2,086	1,885	1,504	1,239	2,853	701
TOTAL	87,476	5,123	7,065	8,294	9,662	9,877	9,684	8,413	7,301	16,796	5,261
WESTERN LARCH											
BOLE	63,850	4,531	6,142	7,069	6,762	6,604	5,790	5,297	4,661	11,934	5,060
TOP	15,859	2,557	2,209	2,126	1,731	1,491	1,217	1,017	825	2,084	602
TOTAL	79,709	7,088	8,351	9,195	8,493	8,095	7,007	6,314	5,486	14,018	5,662
WESTERN HEMLOCK											
BOLE	21,578	1,009	2,102	2,371	2,429	2,515	2,309	2,023	1,572	3,727	1,521
TOP	5,133	755	773	661	576	515	410	346	262	623	212
TOTAL	26,711	1,764	2,875	3,032	3,005	3,030	2,719	2,369	1,834	4,350	1,733
WESTERN WHITE PINE											
BOLE	27,516	731	1,646	2,042	2,839	2,461	2,642	2,735	2,653	6,832	2,935
TOP	7,724	445	443	471	669	606	672	696	695	2,194	833
TOTAL	35,240	1,176	2,089	2,513	3,508	3,067	3,314	3,431	3,348	9,026	3,768
WESTERN RED CEDAR											
BOLE	24,526	1,296	1,784	2,161	2,304	2,352	1,914	1,870	1,929	4,766	4,150
TOP	8,101	906	934	924	847	806	577	538	506	1,315	748
TOTAL	32,627	2,202	2,718	3,085	3,151	3,158	2,491	2,408	2,435	6,081	4,898

LODGEPOLE PINE											
BOLE	203,674	43,157	54,825	45,484	29,678	16,360	7,638	3,730	1,672	1,079	51
TOP	64,096	24,402	14,389	10,894	7,520	3,803	1,680	796	342	261	9
TOTAL	267,770	67,559	69,214	56,378	37,198	20,163	9,318	4,526	2,014	1,340	60
OTHER SOFTWOODS											
BOLE	18,893	2,138	4,749	2,941	2,909	2,190	1,522	899	603	795	147
TOP	5,762	821	1,112	1,043	943	669	461	250	180	249	34
TOTAL	24,655	2,959	5,861	3,984	3,852	2,859	1,983	1,149	783	1,044	181
TOTAL SOFTWOODS											
BOLE	937,224	88,857	124,212	126,083	113,613	99,530	80,141	66,071	54,043	124,126	60,548
TOP	277,073	52,929	42,152	37,602	32,147	26,009	19,802	15,368	11,983	28,233	10,848
TOTAL	1,214,297	141,786	166,364	163,685	145,760	125,539	99,943	81,439	66,026	152,359	71,396
ASPEN & COTTONWOOD											
BOLE	8,422	1,215	1,391	1,257	1,124	847	655	507	340	962	124
TOP	2,341	239	346	364	348	286	230	170	114	232	12
TOTAL	10,763	1,454	1,737	1,621	1,472	1,133	885	677	454	1,194	136
OTHER HARDWOODS											
BOLE	1,804	631	421	329	130	123	25	19	17	24	85
TOP	233	56	50	58	31	28	3	2	2	2	1
TOTAL	2,037	687	471	387	161	151	28	21	19	26	86
TOTAL HARDWOODS											
BOLE	10,226	1,846	1,812	1,586	1,254	970	680	526	357	986	209
TOP	2,574	295	396	422	379	314	233	172	116	234	13
TOTAL	12,800	2,141	2,208	2,008	1,633	1,284	913	698	473	1,220	222
TOTAL ALL SPECIES											
BOLE	947,450	90,703	126,024	127,669	114,867	100,500	80,821	66,597	54,400	125,112	60,757
TOP	279,647	53,224	42,548	38,024	32,526	26,323	20,035	15,540	12,099	28,467	10,861
TOTAL	1,227,097	143,927	168,572	165,693	147,393	126,823	100,856	82,137	66,499	153,579	71,618

Table B-11.—Dry weight of growing stock by species, tree component, and diameter class, Southern Rocky Mountains, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS									
		6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons										
DOUGLAS-FIR											
BOLE	49,148	5,938	4,640	4,370	4,554	4,915	4,962	4,368	3,875	7,936	3,590
TOP	15,468	2,004	2,368	2,123	1,786	1,655	1,340	1,070	864	1,740	518
TOTAL	64,616	7,942	7,008	6,493	6,340	6,570	6,302	5,438	4,739	9,676	4,108
PONDEROSA PINE											
BOLE	119,816	5,154	6,262	7,200	9,393	10,296	12,423	12,816	12,113	35,218	8,941
TOP	52,878	5,996	3,830	3,812	4,234	4,378	4,601	4,571	4,312	13,911	3,233
TOTAL	172,694	11,150	10,092	11,012	13,627	14,674	17,024	17,387	16,425	49,129	12,174
TRUE FIRS											
BOLE	46,509	7,121	6,369	6,496	5,696	4,809	4,029	3,318	2,237	4,467	1,967
TOP	16,473	2,853	2,872	2,850	2,116	1,618	1,190	902	571	1,184	317
TOTAL	62,982	9,974	9,241	9,346	7,812	6,427	5,219	4,220	2,808	5,651	2,284
ENGELMANN SPRUCE											
BOLE	82,602	6,259	7,062	8,975	10,188	9,991	9,766	8,510	6,527	13,083	2,241
TOP	24,700	2,649	3,113	3,618	3,405	2,860	2,452	1,965	1,379	2,861	398
TOTAL	107,302	8,908	10,175	12,593	13,593	12,851	12,218	10,475	7,906	15,944	2,639
WESTERN LARCH											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE											
BOLE	150	1	2	1	3	5	5	4	8	45	76
TOP	64	1	1	0	1	3	2	2	4	23	27
TOTAL	214	2	3	1	4	8	7	6	12	68	103
WESTERN RED CEDAR											
BOLE	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE											
BOLE	50,544	11,983	10,673	9,550	7,561	5,426	2,768	1,439	661	443	40
TOP	14,733	4,638	3,015	2,450	2,076	1,348	646	309	134	110	7
TOTAL	65,277	16,621	13,688	12,000	9,637	6,774	3,414	1,748	795	553	47
OTHER SOFTWOODS											
BOLE	5,503	789	692	565	770	621	550	362	296	644	214
TOP	2,148	301	334	277	356	264	176	112	90	201	37
TOTAL	7,651	1,090	1,026	842	1,126	885	726	474	386	845	251
TOTAL SOFTWOODS											
BOLE	354,272	37,245	35,700	37,157	38,165	36,063	34,503	30,817	25,717	61,836	17,069
TOP	126,464	18,442	15,533	15,130	13,974	12,126	10,407	8,931	7,354	20,030	4,537
TOTAL	480,736	55,687	51,233	52,287	52,139	48,189	44,910	39,748	33,071	81,866	21,606
ASPEN & COTTONWOOD											
BOLE	56,993	9,332	14,332	12,356	8,919	5,387	3,114	1,857	925	770	1
TOP	12,068	1,970	2,604	2,646	2,103	1,320	735	395	175	120	0
TOTAL	69,061	11,302	16,936	15,002	11,022	6,707	3,849	2,252	1,100	890	1
OTHER HARDWOODS											
BOLE	18	0	4	8	6	0	0	0	0	0	0
TOP	6	0	1	2	3	0	0	0	0	0	0
TOTAL	24	0	5	10	9	0	0	0	0	0	0
TOTAL HARDWOODS											
BOLE	57,011	9,332	14,336	12,364	8,925	5,387	3,114	1,857	925	770	1
TOP	12,074	1,970	2,605	2,648	2,106	1,320	735	395	175	120	0
TOTAL	69,085	11,302	16,941	15,012	11,031	6,707	3,849	2,252	1,100	890	1
TOTAL ALL SPECIES											
BOLE	411,283	46,577	50,036	49,521	47,090	41,450	37,617	32,674	26,642	62,606	17,070
TOP	138,538	20,412	18,138	17,778	16,080	13,446	11,142	9,326	7,529	20,150	4,537
TOTAL	549,821	66,989	68,174	67,299	63,170	54,896	48,759	42,000	34,171	82,756	21,607

Table B-12.—Dry weight of growing stock by species, tree component, and diameter class, Rocky Mountains, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS									
		6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons										
DOUGLAS-FIR											
BOLE	328,275	23,008	29,544	34,843	36,738	39,163	34,313	29,593	25,367	54,884	20,822
TOP	87,903	10,668	12,116	12,041	11,051	10,089	7,907	6,212	4,907	10,063	2,849
TOTAL	416,178	33,676	41,660	46,884	47,789	49,252	42,220	35,805	30,274	64,947	23,671
PONDEROSA PINE											
BOLE	230,333	10,082	14,687	18,431	22,086	22,275	22,771	21,009	18,793	53,634	26,565
TOP	95,764	11,365	7,608	7,427	8,467	8,638	8,481	7,744	6,921	21,396	7,717
TOTAL	326,097	21,447	22,295	25,858	30,553	30,913	31,252	28,753	25,714	75,030	34,282
TRUE FIRS											
BOLE	165,492	18,042	21,146	22,699	20,057	17,839	14,857	12,508	8,956	20,153	9,235
TOP	52,634	9,816	9,431	8,614	6,271	4,957	3,643	2,808	1,853	4,030	1,211
TOTAL	218,126	27,858	30,577	31,313	26,328	22,796	18,500	15,316	10,809	24,183	10,446
ENGELMANN SPRUCE											
BOLE	151,162	9,335	11,920	15,083	17,642	17,782	17,565	15,419	12,589	27,026	6,801
TOP	43,616	4,696	5,320	5,804	5,613	4,946	4,337	3,469	2,618	5,714	1,099
TOTAL	194,778	14,031	17,240	20,887	23,255	22,728	21,902	18,888	15,207	32,740	7,900
WESTERN LARCH											
BOLE	63,850	4,531	6,142	7,069	6,762	6,604	5,790	5,297	4,661	11,934	5,060
TOP	15,859	2,557	2,209	2,126	1,731	1,491	1,217	1,017	825	2,084	602
TOTAL	79,709	7,088	8,351	9,195	8,493	8,095	7,007	6,314	5,486	14,018	5,662
WESTERN HEMLOCK											
BOLE	21,578	1,009	2,102	2,371	2,429	2,515	2,309	2,023	1,572	3,727	1,521
TOP	5,133	755	773	661	576	515	410	346	262	623	212
TOTAL	26,711	1,764	2,875	3,032	3,005	3,030	2,719	2,369	1,834	4,350	1,733
WESTERN WHITE PINE											
BOLE	27,666	732	1,648	2,043	2,842	2,466	2,647	2,739	2,661	6,877	3,011
TOP	7,788	446	444	471	670	609	674	698	699	2,217	860
TOTAL	35,454	1,178	2,092	2,514	3,512	3,075	3,321	3,437	3,360	9,094	3,871
WESTERN RED CEDAR											
BOLE	24,526	1,296	1,784	2,161	2,304	2,352	1,914	1,870	1,929	4,766	4,150
TOP	8,101	906	934	924	847	806	577	538	506	1,315	748
TOTAL	32,627	2,202	2,718	3,085	3,151	3,158	2,491	2,408	2,435	6,081	4,898

LODGEPOLE PINE											
BOLE	254,218	55,140	65,498	55,034	37,239	21,786	10,406	5,169	2,333	1,522	91
TOP	78,829	29,040	17,404	13,344	9,596	5,151	2,326	1,105	476	371	16
TOTAL	333,047	84,180	82,902	68,378	46,835	26,937	12,732	6,274	2,809	1,893	107
OTHER SOFTWOODS											
BOLE	24,396	2,927	5,441	3,506	3,679	2,811	2,072	1,261	899	1,439	361
TOP	7,910	1,122	1,446	1,320	1,299	933	637	362	270	450	71
TOTAL	32,306	4,049	6,887	4,826	4,978	3,744	2,709	1,623	1,169	1,889	432
TOTAL SOFTWOODS											
BOLE	1,291,496	126,102	159,912	163,240	151,778	135,593	114,644	96,888	79,760	185,962	77,617
TOP	403,537	71,371	57,685	52,732	46,121	38,135	30,209	24,299	19,337	48,263	15,385
TOTAL	1,695,033	197,473	217,597	215,972	197,899	173,728	144,853	121,187	99,097	234,225	93,002
ASPEN & COTTONWOOD											
BOLE	65,415	10,547	15,723	13,613	10,043	6,234	3,769	2,364	1,265	1,732	125
TOP	14,409	2,209	2,950	3,010	2,451	1,606	965	565	289	352	12
TOTAL	79,824	12,756	18,673	16,623	12,494	7,840	4,734	2,929	1,554	2,084	137
OTHER HARDWOODS											
BOLE	1,822	631	425	337	136	123	25	19	17	24	85
TOP	239	56	51	60	34	28	3	2	2	2	1
TOTAL	2,061	687	476	397	170	151	28	21	19	26	86
TOTAL HARDWOODS											
BOLE	67,237	11,178	16,148	13,950	10,179	6,357	3,794	2,383	1,282	1,756	210
TOP	14,648	2,265	3,001	3,070	2,485	1,634	968	567	291	354	13
TOTAL	81,885	13,443	19,149	17,020	12,664	7,991	4,762	2,950	1,573	2,110	223
TOTAL ALL SPECIES											
BOLE	1,358,733	137,280	176,060	177,190	161,957	141,950	118,438	99,271	81,042	187,718	77,827
TOP	418,185	73,636	60,686	55,802	48,606	39,769	31,177	24,866	19,628	48,617	15,398
TOTAL	1,776,918	210,916	236,746	232,992	210,563	181,719	149,615	124,137	100,670	236,335	93,225

Table B-13.—Dry weight of small trees and rough and rotten trees by species, tree component, and diameter class, Arizona, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS											
		2	4	6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons												
DOUGLAS-FIR													
BOLE	104	0	0	10	13	2	4	4	4	4	10	22	31
TOP	766	214	473	18	17	2	3	2	5	1	5	11	15
TOTAL	870	214	473	28	30	4	7	6	9	5	15	33	46
PONDEROSA PINE													
BOLE	1,014	0	0	146	179	37	80	92	88	75	68	200	49
TOP	7,460	2,062	4,171	359	207	30	56	60	102	50	47	193	123
TOTAL	8,474	2,062	4,171	505	386	67	136	152	190	125	115	393	172
TRUE FIRS													
BOLE	61	0	0	15	12	2	4	7	1	3	2	5	10
TOP	391	92	230	28	18	2	2	4	2	2	0	3	8
TOTAL	452	92	230	43	30	4	6	11	3	5	2	8	18
ENGELMANN SPRUCE													
BOLE	73	0	0	7	9	5	9	7	8	7	6	13	2
TOP	360	84	200	16	20	6	8	3	9	3	2	7	2
TOTAL	433	84	200	23	29	11	17	10	17	10	8	20	4
WESTERN LARCH													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN RED CEDAR													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER SOFTWOODS													
BOLE	830	0	0	38	49	34	39	65	51	58	43	208	245
TOP	726	72	122	79	68	35	33	45	32	32	22	99	87
TOTAL	1,556	72	122	117	117	69	72	110	83	90	65	307	332
TOTAL SOFTWOODS													
BOLE	2,082	0	0	216	262	80	136	175	152	147	129	448	337
TOP	9,703	2,524	5,196	500	330	75	102	114	150	88	76	313	235
TOTAL	11,785	2,524	5,196	716	592	155	238	289	302	235	205	761	572
ASPEN & COTTONWOOD													
BOLE	1,192	0	0	187	109	41	129	91	238	22	186	158	31
TOP	717	35	117	63	57	41	72	53	125	14	76	55	9
TOTAL	1,909	35	117	250	166	82	201	144	363	36	262	213	40
OTHER HARDWOODS													
BOLE	888	0	0	174	126	124	118	93	83	48	50	63	9
TOP	839	85	188	80	68	84	86	75	63	37	33	37	3
TOTAL	1,727	85	188	254	194	208	204	168	146	85	83	100	12
TOTAL HARDWOODS													
BOLE	2,080	0	0	361	235	165	247	184	321	70	236	221	40
TOP	1,556	120	305	143	125	125	158	128	188	51	109	92	12
TOTAL	3,636	120	305	504	360	290	405	312	509	121	345	313	52
TOTAL ALL SPECIES													
BOLE	4,162	0	0	577	497	245	383	359	473	217	365	669	377
TOP	11,259	2,644	5,501	643	455	200	260	242	338	139	185	405	247
TOTAL	15,421	2,644	5,501	1,220	952	445	643	601	811	356	550	1,074	624

Table B-14.—Dry weight of small trees and rough and rotten trees by species, tree component, and diameter class, Colorado, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS											
		2	4	6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons												
DOUGLAS-FIR													
BOLE	799	0	0	116	134	102	53	64	64	61	64	94	47
TOP	2,497	538	1,539	79	89	73	32	31	27	24	23	31	11
TOTAL	3,296	538	1,539	195	223	175	85	95	91	85	87	125	58
PONDEROSA PINE													
BOLE	471	0	0	40	62	71	51	31	52	36	32	62	34
TOP	2,152	380	1,302	108	66	65	40	24	41	29	25	53	19
TOTAL	2,623	380	1,302	148	128	136	91	55	93	65	57	115	53
TRUE FIRS													
BOLE	1,460	0	0	263	192	168	160	150	121	80	108	155	63
TOP	6,339	1,811	3,684	189	132	115	93	80	59	36	45	72	23
TOTAL	7,799	1,811	3,684	452	324	283	253	230	180	116	153	227	86
ENGELMANN SPRUCE													
BOLE	2,703	0	0	223	280	231	199	218	214	336	244	584	174
TOP	6,738	1,785	3,715	174	187	143	100	95	84	121	82	203	49
TOTAL	9,441	1,785	3,715	397	467	374	299	313	298	457	326	787	223
WESTERN LARCH													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN RED CEDAR													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE													
BOLE	1,703	0	0	424	369	219	180	179	114	110	62	46	0
TOP	7,105	1,684	4,549	360	158	92	78	69	41	37	19	18	0
TOTAL	8,808	1,684	4,549	784	527	311	258	248	155	147	81	64	0
OTHER SOFTWOODS													
BOLE	404	0	0	50	71	44	39	40	53	25	51	31	0
TOP	684	97	304	39	53	36	30	28	35	14	25	23	0
TOTAL	1,088	97	304	89	124	80	69	68	88	39	76	54	0
TOTAL SOFTWOODS													
BOLE	7,540	0	0	1,116	1,108	835	682	682	618	648	561	972	318
TOP	25,515	6,295	15,093	949	685	524	373	327	287	261	219	400	102
TOTAL	33,055	6,295	15,093	2,065	1,793	1,359	1,055	1,009	905	909	780	1,372	420
ASPEN & COTTONWOOD													
BOLE	12,665	0	0	3,586	3,595	2,474	1,005	709	503	414	213	156	10
TOP	9,504	1,586	4,817	730	824	686	303	217	148	108	50	33	2
TOTAL	22,169	1,586	4,817	4,316	4,419	3,160	1,308	926	651	522	263	189	12
OTHER HARDWOODS													
BOLE	41	0	0	12	10	8	3	8	0	0	0	0	0
TOP	40	2	21	5	4	3	1	4	0	0	0	0	0
TOTAL	81	2	21	17	14	11	4	12	0	0	0	0	0
TOTAL HARDWOODS													
BOLE	12,706	0	0	3,598	3,605	2,482	1,008	717	503	414	213	156	10
TOP	9,544	1,588	4,838	735	828	689	304	221	148	108	50	33	2
TOTAL	22,250	1,588	4,838	4,333	4,433	3,171	1,312	938	651	522	263	189	12
TOTAL ALL SPECIES													
BOLE	20,246	0	0	4,714	4,713	3,317	1,690	1,399	1,121	1,062	774	1,128	328
TOP	35,059	7,883	19,931	1,684	1,513	1,213	677	548	435	369	269	433	104
TOTAL	55,305	7,883	19,931	6,398	6,226	4,530	2,367	1,947	1,556	1,431	1,043	1,561	432

Table B-15.—Dry weight of small trees and rough and rotten trees by species, tree component, and diameter class, Idaho, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS											
		2	4	6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons												
DOUGLAS-FIR													
BOLE	3,002	0	0	173	185	197	210	178	281	274	219	796	489
TOP	9,039	1,763	5,935	172	141	123	112	84	117	105	77	281	129
TOTAL	12,041	1,763	5,935	345	326	320	322	262	398	379	296	1,077	618
PONDEROSA PINE													
BOLE	769	0	0	22	25	41	49	49	53	67	45	174	244
TOP	1,957	214	1,174	68	28	29	35	33	39	52	34	134	117
TOTAL	2,726	214	1,174	90	53	70	84	82	92	119	79	308	361
TRUE FIRS													
BOLE	2,619	0	0	115	154	164	176	162	222	247	163	698	518
TOP	11,646	3,295	7,132	148	133	113	98	81	98	101	62	252	133
TOTAL	14,265	3,295	7,132	263	287	277	274	243	320	348	225	950	651
ENGELMANN SPRUCE													
BOLE	369	0	0	13	13	11	18	26	41	27	37	120	63
TOP	1,257	412	675	17	12	8	10	12	18	11	14	49	19
TOTAL	1,626	412	675	30	25	19	28	38	59	38	51	169	82
WESTERN LARCH													
BOLE	558	0	0	50	55	46	42	34	44	44	29	134	80
TOP	1,382	154	1,009	36	34	24	17	13	15	14	9	41	16
TOTAL	1,940	154	1,009	86	89	70	59	47	59	58	38	175	96
WESTERN HEMLOCK													
BOLE	605	0	0	17	31	37	37	37	65	69	61	181	70
TOP	1,887	607	1,009	26	24	22	19	16	24	24	22	66	28
TOTAL	2,492	607	1,009	43	55	59	56	53	89	93	83	247	98
WESTERN WHITE PINE													
BOLE	740	0	0	14	24	22	37	23	52	63	60	254	191
TOP	796	119	238	13	13	9	17	11	26	34	31	170	115
TOTAL	1,536	119	238	27	37	31	54	34	78	97	91	424	306
WESTERN RED CEDAR													
BOLE	911	0	0	29	32	40	45	43	59	66	69	255	273
TOP	3,411	986	1,926	31	33	32	31	28	34	38	34	137	101
TOTAL	4,322	986	1,926	60	65	72	76	71	93	104	103	392	374

LODGEPOLE PINE													
BOLE	1,204	0	0	295	223	425	115	58	40	26	10	12	0
TOP	8,244	1,237	6,200	358	122	202	60	27	18	11	4	5	0
TOTAL	9,448	1,237	6,200	653	345	627	175	85	58	37	14	17	0
OTHER SOFTWOODS													
BOLE	208	0	0	38	29	13	20	27	22	13	17	25	4
TOP	481	99	257	14	16	12	14	17	13	8	10	18	3
TOTAL	689	99	257	52	45	25	34	44	35	21	27	43	7
TOTAL SOFTWOODS													
BOLE	10,985	0	0	766	771	996	749	637	879	896	710	2,649	1,932
TOP	40,100	8,886	25,555	883	556	574	413	322	402	398	297	1,153	661
TOTAL	51,085	8,886	25,555	1,649	1,327	1,570	1,162	959	1,281	1,294	1,007	3,802	2,593
ASPEN & COTTONWOOD													
BOLE	550	0	0	155	153	113	52	27	18	10	8	13	1
TOP	474	46	226	47	72	43	16	9	6	3	2	4	0
TOTAL	1,024	46	226	202	225	156	68	36	24	13	10	17	1
OTHER HARDWOODS													
BOLE	468	0	0	270	107	85	2	0	0	1	2	0	1
TOP	283	59	161	27	13	23	0	0	0	0	0	0	0
TOTAL	751	59	161	297	120	108	2	0	0	1	2	0	1
TOTAL HARDWOODS													
BOLE	1,018	0	0	425	260	198	54	27	18	11	10	13	2
TOP	757	105	387	74	85	66	16	9	6	3	2	4	0
TOTAL	1,775	105	387	499	345	264	70	36	24	14	12	17	2
TOTAL ALL SPECIES													
BOLE	12,003	0	0	1,191	1,031	1,194	803	664	897	907	720	2,662	1,934
TOP	40,857	8,991	25,942	957	641	640	429	331	408	401	299	1,157	661
TOTAL	52,860	8,991	25,942	2,148	1,672	1,834	1,232	995	1,305	1,308	1,019	3,819	2,595

Table B-16.—Dry weight of small trees and rough and rotten trees by species, tree component, and diameter class, Montana, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS											
		2	4	6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons												
DOUGLAS-FIR													
BOLE	3,204	0	0	446	398	456	228	285	252	228	188	514	209
TOP	20,475	6,500	12,654	288	244	245	92	104	80	61	45	124	38
TOTAL	23,679	6,500	12,654	734	642	701	320	389	332	289	233	638	247
PONDEROSA PINE													
BOLE	965	0	0	104	98	128	56	78	74	51	44	218	114
TOP	3,814	613	2,582	93	62	62	26	43	41	31	26	167	68
TOTAL	4,779	613	2,582	197	160	190	82	121	115	82	70	385	182
TRUE FIRS													
BOLE	813	0	0	129	89	157	106	84	91	59	35	58	5
TOP	10,066	3,980	5,712	101	68	80	35	26	25	14	8	16	1
TOTAL	10,879	3,980	5,712	230	157	237	141	110	116	73	43	74	6
ENGELMANN SPRUCE													
BOLE	559	0	0	39	38	153	35	42	42	37	27	94	52
TOP	3,205	1,415	1,557	38	31	63	14	16	14	11	7	26	13
TOTAL	3,764	1,415	1,557	77	69	216	49	58	56	48	34	120	65
WESTERN LARCH													
BOLE	804	0	0	89	56	91	48	56	57	51	47	184	125
TOP	4,948	982	3,575	102	48	59	19	22	19	15	12	58	37
TOTAL	5,752	982	3,575	191	104	150	67	78	76	66	59	242	162
WESTERN HEMLOCK													
BOLE	536	0	0	12	31	39	61	49	91	69	57	103	24
TOP	1,079	564	398	13	12	12	12	11	17	11	9	17	3
TOTAL	1,615	564	398	25	43	51	73	60	108	80	66	120	27
WESTERN WHITE PINE													
BOLE	58	0	0	4	5	12	6	6	6	3	5	8	3
TOP	523	124	366	6	3	7	3	3	2	1	1	6	1
TOTAL	581	124	366	10	8	19	9	9	8	4	6	14	4
WESTERN RED CEDAR													
BOLE	263	0	0	13	7	26	26	15	13	10	14	61	78
TOP	1,985	905	962	17	9	15	10	6	5	3	5	25	23
TOTAL	2,248	905	962	30	16	41	36	21	18	13	19	86	101

LODGEPOLE PINE													
BOLE	3,666	0	0	1,564	594	555	767	112	48	13	9	4	0
TOP	29,426	6,509	21,301	981	224	180	187	28	11	3	1	1	0
TOTAL	33,092	6,509	21,301	2,545	818	735	954	140	59	16	10	5	0
OTHER SOFTWOODS													
BOLE	184	0	0	33	32	40	24	17	12	8	6	6	6
TOP	1,185	361	760	10	12	16	8	6	4	2	2	3	1
TOTAL	1,369	361	760	43	44	56	32	23	16	10	8	9	7
TOTAL SOFTWOODS													
BOLE	11,052	0	0	2,433	1,348	1,657	1,357	744	686	529	432	1,250	616
TOP	76,706	21,953	49,867	1,649	713	739	406	265	218	152	116	443	185
TOTAL	87,758	21,953	49,867	4,082	2,061	2,396	1,763	1,009	904	681	548	1,693	801
ASPEN & COTTONWOOD													
BOLE	437	0	0	121	81	8	8	10	27	0	103	67	12
TOP	223	35	27	30	22	14	3	21	11	0	39	18	3
TOTAL	660	35	27	151	103	22	11	31	38	0	142	85	15
OTHER HARDWOODS													
BOLE	80	0	0	29	21	12	7	7	2	0	0	0	2
TOP	279	67	191	6	6	4	3	2	0	0	0	0	0
TOTAL	359	67	191	35	27	16	10	9	2	0	0	0	2
TOTAL HARDWOODS													
BOLE	517	0	0	150	102	20	15	17	29	0	103	67	14
TOP	502	102	218	36	28	18	6	23	11	0	39	18	3
TOTAL	1,019	102	218	186	130	38	21	40	40	0	142	85	17
TOTAL ALL SPECIES													
BOLE	11,569	0	0	2,583	1,450	1,677	1,372	761	715	529	535	1,317	630
TOP	77,208	22,055	50,085	1,685	741	757	412	288	229	152	155	461	188
TOTAL	88,777	22,055	50,085	4,268	2,191	2,434	1,784	1,049	944	681	690	1,778	818

Table B-17.—Dry weight of small trees and rough and rotten trees by species, tree component, and diameter class, Nevada, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS											
		2	4	6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons												
DOUGLAS-FIR													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
PONDEROSA PINE													
BOLE	43	0	0	0	1	5	1	2	7	1	4	16	6
TOP	79	6	29	4	3	5	1	2	5	2	3	15	4
TOTAL	122	6	29	4	4	10	2	4	12	3	7	31	10
TRUE FIRS													
BOLE	26	0	0	1	2	1	1	4	2	0	2	4	9
TOP	59	13	32	3	1	1	1	2	1	0	1	2	2
TOTAL	85	13	32	4	3	2	2	6	3	0	3	6	11
ENGELMANN SPRUCE													
BOLE	8	0	0	0	0	8	0	0	0	0	0	0	0
TOP	11	3	3	0	0	5	0	0	0	0	0	0	0
TOTAL	19	3	3	0	0	13	0	0	0	0	0	0	0
WESTERN LARCH													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE													
BOLE	3	0	0	0	0	0	0	0	0	0	0	1	2
TOP	7	1	3	0	0	0	0	0	0	0	0	1	2
TOTAL	10	1	3	0	0	0	0	0	0	0	0	2	4
WESTERN RED CEDAR													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE													
BOLE	6	0	0	0	1	0	0	0	0	0	0	2	3
TOP	9	1	5	1	0	0	0	0	0	0	0	1	1
TOTAL	15	1	5	1	1	0	0	0	0	0	0	3	4
OTHER SOFTWOODS													
BOLE	20	0	0	0	0	0	0	0	2	3	2	3	10
TOP	29	4	17	0	0	0	0	0	1	2	1	1	3
TOTAL	49	4	17	0	0	0	0	0	3	5	3	4	13
TOTAL SOFTWOODS													
BOLE	106	0	0	1	4	14	2	6	11	4	8	26	30
TOP	194	28	89	8	4	11	2	4	7	4	5	20	12
TOTAL	300	28	89	9	8	25	4	10	18	8	13	46	42
ASPEN & COTTONWOOD													
BOLE	138	0	0	46	41	22	24	1	1	1	0	2	0
TOP	29	1	5	6	6	5	6	0	0	0	0	0	0
TOTAL	167	1	5	52	47	27	30	1	1	1	0	2	0
OTHER HARDWOODS													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL HARDWOODS													
BOLE	138	0	0	46	41	22	24	1	1	1	0	2	0
TOP	29	1	5	6	6	5	6	0	0	0	0	0	0
TOTAL	167	1	5	52	47	27	30	1	1	1	0	2	0
TOTAL ALL SPECIES													
BOLE	244	0	0	47	45	36	26	7	12	5	8	28	30
TOP	223	29	94	14	10	16	8	4	7	4	5	20	12
TOTAL	467	29	94	61	55	52	34	11	19	9	13	48	42

Table B-18.—Dry weight of small trees and rough and rotten trees by species, tree component, and diameter class, New Mexico, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS											
		2	4	6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons												
DOUGLAS-FIR													
BOLE	516	0	0	77	92	30	43	55	49	37	43	54	36
TOP	2,522	639	1,484	89	99	37	40	40	26	16	19	23	10
TOTAL	3,038	639	1,484	166	191	67	83	95	75	53	62	77	46
PONDEROSA PINE													
BOLE	1,320	0	0	153	151	50	96	74	218	151	110	211	106
TOP	6,897	1,673	4,158	311	163	64	85	58	114	72	48	116	35
TOTAL	8,217	1,673	4,158	464	314	114	181	132	332	223	158	327	141
TRUE FIRS													
BOLE	570	0	0	121	139	50	59	33	43	26	27	42	30
TOP	2,164	581	1,171	110	126	41	39	20	22	11	12	20	11
TOTAL	2,734	581	1,171	231	265	91	98	53	65	37	39	62	41
ENGELMANN SPRUCE													
BOLE	268	0	0	63	45	22	37	17	36	22	9	13	4
TOP	1,257	291	759	64	41	24	31	10	18	9	3	5	2
TOTAL	1,525	291	759	127	86	46	68	27	54	31	12	18	6
WESTERN LARCH													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN RED CEDAR													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER SOFTWOODS													
BOLE	1,053	0	0	129	103	93	100	77	106	79	57	161	148
TOP	1,231	184	402	110	87	67	68	49	55	37	30	87	55
TOTAL	2,284	184	402	239	190	160	168	126	161	116	87	248	203
TOTAL SOFTWOODS													
BOLE	3,727	0	0	543	530	245	335	256	452	315	246	481	324
TOP	14,071	3,368	7,974	684	516	233	263	177	235	145	112	251	113
TOTAL	17,798	3,368	7,974	1,227	1,046	478	598	433	687	460	358	732	437
ASPEN & COTTONWOOD													
BOLE	2,201	0	0	408	277	399	239	233	132	309	84	120	0
TOP	1,189	126	515	81	82	120	66	61	34	67	17	20	0
TOTAL	3,390	126	515	489	359	519	305	294	166	376	101	140	0
OTHER HARDWOODS													
BOLE	993	0	0	209	173	108	117	97	88	74	45	73	9
TOP	875	232	361	47	45	34	40	33	29	22	11	19	2
TOTAL	1,868	232	361	256	218	142	157	130	117	96	56	92	11
TOTAL HARDWOODS													
BOLE	3,194	0	0	617	450	507	356	330	220	383	129	193	9
TOP	2,064	358	876	128	127	154	106	94	63	89	28	39	2
TOTAL	5,258	358	876	745	577	661	462	424	283	472	157	232	11
TOTAL ALL SPECIES													
BOLE	6,921	0	0	1,160	980	752	691	586	672	698	375	674	333
TOP	16,135	3,726	8,850	812	643	387	369	271	298	234	140	290	115
TOTAL	23,056	3,726	8,850	1,972	1,623	1,139	1,060	857	970	932	515	964	448

Table B-19.—Dry weight of small trees and rough and rotten trees by species, tree component, and diameter class, western South Dakota, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS											
		2	4	6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons												
DOUGLAS-FIR													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
PONDEROSA PINE													
BOLE	216	0	0	41	48	43	26	14	21	10	8	5	0
TOP	4,315	1,394	2,752	71	30	21	14	8	12	5	4	4	0
TOTAL	4,531	1,394	2,752	112	78	64	40	22	33	15	12	9	0
TRUE FIRS													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
ENGELMANN SPRUCE													
BOLE	12	0	0	1	0	1	0	1	0	3	0	6	0
TOP	130	48	76	1	0	1	0	0	0	1	0	3	0
TOTAL	142	48	76	2	0	2	0	1	0	4	0	9	0
WESTERN LARCH													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN RED CEDAR													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER SOFTWOODS													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL SOFTWOODS													
BOLE	228	0	0	42	48	44	26	15	21	13	8	11	0
TOP	4,445	1,442	2,828	72	30	22	14	8	12	6	4	7	0
TOTAL	4,673	1,442	2,828	114	78	66	40	23	33	19	12	18	0
ASPEN & COTTONWOOD													
BOLE	121	0	0	61	30	19	11	0	0	0	0	0	0
TOP	61	5	22	17	8	6	3	0	0	0	0	0	0
TOTAL	182	5	22	78	38	25	14	0	0	0	0	0	0
OTHER HARDWOODS													
BOLE	155	0	0	80	35	18	7	6	2	2	1	3	1
TOP	121	31	51	18	11	4	2	2	0	1	0	1	0
TOTAL	276	31	51	98	46	22	9	8	2	3	1	4	1
TOTAL HARDWOODS													
BOLE	276	0	0	141	65	37	18	6	2	2	1	3	1
TOP	182	36	73	35	19	10	5	2	0	1	0	1	0
TOTAL	458	36	73	176	84	47	23	8	2	3	1	4	1
TOTAL ALL SPECIES													
BOLE	504	0	0	183	113	81	44	21	23	15	9	14	1
TOP	4,627	1,478	2,901	107	49	32	19	10	12	7	4	8	0
TOTAL	5,131	1,478	2,901	290	162	113	63	31	35	22	13	22	1

Table B-20.—Dry weight of small trees and rough and rotten trees by species, tree component, and diameter class, Utah, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS											
		2	4	6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons												
DOUGLAS-FIR													
BOLE	517	0	0	39	9	17	33	8	40	56	52	145	118
TOP	1,604	311	824	46	18	33	49	9	33	53	40	123	65
TOTAL	2,121	311	824	85	27	50	82	17	73	109	92	268	183
PONDEROSA PINE													
BOLE	133	0	0	3	2	5	9	3	5	3	6	30	67
TOP	758	131	348	21	7	13	18	6	6	5	12	58	133
TOTAL	891	131	348	24	9	18	27	9	11	8	18	88	200
TRUE FIRS													
BOLE	338	0	0	34	38	20	33	14	13	22	18	57	89
TOP	2,761	759	1,604	68	61	36	53	18	14	23	18	51	56
TOTAL	3,099	759	1,604	102	99	56	86	32	27	45	36	108	145
ENGELMANN SPRUCE													
BOLE	194	0	0	31	14	11	31	12	9	18	18	35	15
TOP	1,125	366	540	48	20	21	41	13	8	16	15	28	9
TOTAL	1,319	366	540	79	34	32	72	25	17	34	33	63	24
WESTERN LARCH													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN RED CEDAR													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE													
BOLE	204	0	0	31	27	33	22	25	22	16	12	16	0
TOP	2,374	486	1,669	54	29	43	21	22	17	12	9	12	0
TOTAL	2,578	486	1,669	85	56	76	43	47	39	28	21	28	0
OTHER SOFTWOODS													
BOLE	37	0	0	5	7	3	1	2	1	4	0	13	1
TOP	90	18	31	4	5	3	2	2	1	4	0	19	1
TOTAL	127	18	31	9	12	6	3	4	2	8	0	32	2
TOTAL SOFTWOODS													
BOLE	1,423	0	0	143	97	89	129	64	90	119	106	296	290
TOP	8,712	2,071	5,016	241	140	149	184	70	79	113	94	291	264
TOTAL	10,135	2,071	5,016	384	237	238	313	134	169	232	200	587	554
ASPEN & COTTONWOOD													
BOLE	4,262	0	0	1,077	1,236	1,038	310	258	188	101	32	22	0
TOP	4,103	464	1,981	361	417	428	159	133	91	48	14	7	0
TOTAL	8,365	464	1,981	1,438	1,653	1,466	469	391	279	149	46	29	0
OTHER HARDWOODS													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL HARDWOODS													
BOLE	4,262	0	0	1,077	1,236	1,038	310	258	188	101	32	22	0
TOP	4,103	464	1,981	361	417	428	159	133	91	48	14	7	0
TOTAL	8,365	464	1,981	1,438	1,653	1,466	469	391	279	149	46	29	0
TOTAL ALL SPECIES													
BOLE	5,685	0	0	1,220	1,333	1,127	439	322	278	220	138	318	290
TOP	12,815	2,535	6,997	602	557	577	343	203	170	161	108	298	264
TOTAL	18,500	2,535	6,997	1,822	1,890	1,704	782	525	448	381	246	616	554

Table B-21.—Dry weight of small trees and rough and rotten trees by species, tree component, and diameter class, Wyoming, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS											
		2	4	6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons												
DOUGLAS-FIR													
BOLE	310	0	0	30	28	22	18	27	16	31	30	83	25
TOP	1,439	357	892	32	24	16	11	15	9	15	13	42	13
TOTAL	1,749	357	892	62	52	38	29	42	25	46	43	125	38
PONDEROSA PINE													
BOLE	229	0	0	11	22	12	39	42	28	21	14	26	14
TOP	2,952	591	2,090	41	25	9	29	35	26	22	16	46	22
TOTAL	3,181	591	2,090	52	47	21	68	77	54	43	30	72	36
TRUE FIRS													
BOLE	509	0	0	145	125	35	55	41	25	24	21	37	1
TOP	4,366	1,561	2,370	142	115	31	43	28	17	15	15	29	0
TOTAL	4,875	1,561	2,370	287	240	66	98	69	42	39	36	66	1
ENGELMANN SPRUCE													
BOLE	1,660	0	0	58	46	42	49	55	39	54	70	1,135	112
TOP	2,318	499	947	68	44	34	34	33	23	26	34	533	43
TOTAL	3,978	499	947	126	90	76	83	88	62	80	104	1,668	155
WESTERN LARCH													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN RED CEDAR													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE													
BOLE	1,194	0	0	325	347	119	130	74	62	54	41	42	0
TOP	8,595	2,296	5,297	482	227	67	80	41	34	27	20	24	0
TOTAL	9,789	2,296	5,297	807	574	186	210	115	96	81	61	66	0
OTHER SOFTWOODS													
BOLE	488	0	0	44	115	50	84	62	13	34	12	56	18
TOP	955	177	404	46	109	38	59	41	9	21	6	35	10
TOTAL	1,443	177	404	90	224	88	143	103	22	55	18	91	28
TOTAL SOFTWOODS													
BOLE	4,390	0	0	613	683	280	375	301	183	218	188	1,379	170
TOP	20,625	5,481	12,000	811	544	195	256	193	118	126	104	709	88
TOTAL	25,015	5,481	12,000	1,424	1,227	475	631	494	301	344	292	2,088	258
ASPEN & COTTONWOOD													
BOLE	899	0	0	342	296	118	68	17	7	36	15	0	0
TOP	866	157	525	61	62	26	18	4	2	7	4	0	0
TOTAL	1,765	157	525	403	358	144	86	21	9	43	19	0	0
OTHER HARDWOODS													
BOLE	30	0	0	14	7	2	5	0	2	0	0	0	0
TOP	4	0	0	2	1	1	0	0	0	0	0	0	0
TOTAL	34	0	0	16	8	3	5	0	2	0	0	0	0
TOTAL HARDWOODS													
BOLE	929	0	0	356	303	120	73	17	9	36	15	0	0
TOP	870	157	525	63	63	27	18	4	2	7	4	0	0
TOTAL	1,799	157	525	419	366	147	91	21	11	43	19	0	0
TOTAL ALL SPECIES													
BOLE	5,319	0	0	969	986	400	448	318	192	254	203	1,379	170
TOP	21,495	5,638	12,525	874	607	222	274	197	120	133	108	709	88
TOTAL	26,814	5,638	12,525	1,843	1,593	622	722	515	312	387	311	2,088	258

Table B-22.—Dry weight of small trees and rough and rotten trees by species, tree component, and diameter class, Northern Rocky Mountains, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS											
		2	4	6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons												
DOUGLAS-FIR													
BOLE	6,516	0	0	649	611	675	456	490	549	533	437	1,393	723
TOP	30,953	8,620	19,481	492	409	384	215	203	206	181	135	447	180
TOTAL	37,469	8,620	19,481	1,141	1,020	1,059	671	693	755	714	572	1,840	903
PONDEROSA PINE													
BOLE	2,179	0	0	178	193	224	170	183	176	149	111	423	372
TOP	13,038	2,812	8,598	273	145	121	104	119	118	110	80	351	207
TOTAL	15,217	2,812	8,598	451	338	345	274	302	294	259	191	774	579
TRUE FIRS													
BOLE	3,941	0	0	389	368	356	337	287	338	330	219	793	524
TOP	26,078	8,836	15,214	391	316	224	176	135	140	130	85	297	134
TOTAL	30,019	8,836	15,214	780	684	580	513	422	478	460	304	1,090	658
ENGELMANN SPRUCE													
BOLE	2,600	0	0	111	97	207	102	124	122	121	134	1,355	227
TOP	6,910	2,374	3,255	124	87	106	58	61	55	49	55	611	75
TOTAL	9,510	2,374	3,255	235	184	313	160	185	177	170	189	1,966	302
WESTERN LARCH													
BOLE	1,362	0	0	139	111	137	90	90	101	95	76	318	205
TOP	6,330	1,136	4,584	138	82	83	36	35	34	29	21	99	53
TOTAL	7,692	1,136	4,584	277	193	220	126	125	135	124	97	417	258
WESTERN HEMLOCK													
BOLE	1,141	0	0	29	62	76	98	86	156	138	118	284	94
TOP	2,966	1,171	1,407	39	36	34	31	27	41	35	31	83	31
TOTAL	4,107	1,171	1,407	68	98	110	129	113	197	173	149	367	125
WESTERN WHITE PINE													
BOLE	798	0	0	18	29	34	43	29	58	66	65	262	194
TOP	1,319	243	604	19	16	16	20	14	28	35	32	176	116
TOTAL	2,117	243	604	37	45	50	63	43	86	101	97	438	310
WESTERN RED CEDAR													
BOLE	1,174	0	0	42	39	66	71	58	72	76	83	316	351
TOP	5,396	1,891	2,888	48	42	47	41	34	39	41	39	162	124
TOTAL	6,570	1,891	2,888	90	81	113	112	92	111	117	122	478	475

LODGEPOLE PINE													
BOLE	6,064	0	0	2,184	1,164	1,099	1,012	244	150	93	60	58	0
TOP	46,265	10,042	32,798	1,821	573	449	327	96	63	41	25	30	0
TOTAL	52,329	10,042	32,798	4,005	1,737	1,548	1,339	340	213	134	85	88	0
OTHER SOFTWOODS													
BOLE	880	0	0	115	176	103	128	106	47	55	35	87	28
TOP	2,621	637	1,421	70	137	66	81	64	26	31	18	56	14
TOTAL	3,501	637	1,421	185	313	169	209	170	73	86	53	143	42
TOTAL SOFTWOODS													
BOLE	26,655	0	0	3,854	2,850	2,977	2,507	1,697	1,769	1,656	1,338	5,289	2,718
TOP	141,876	37,762	90,250	3,415	1,843	1,530	1,089	788	750	682	521	2,312	934
TOTAL	168,531	37,762	90,250	7,269	4,693	4,507	3,596	2,485	2,519	2,338	1,859	7,601	3,652
ASPEN & COTTONWOOD													
BOLE	2,007	0	0	679	560	258	139	54	52	46	126	80	13
TOP	1,624	243	800	155	164	89	40	34	19	10	45	22	3
TOTAL	3,631	243	800	834	724	347	179	88	71	56	171	102	16
OTHER HARDWOODS													
BOLE	733	0	0	393	170	117	21	13	6	3	3	3	4
TOP	687	157	403	53	31	32	5	4	0	1	0	1	0
TOTAL	1,420	157	403	446	201	149	26	17	6	4	3	4	4
TOTAL HARDWOODS													
BOLE	2,740	0	0	1,072	730	375	160	67	58	49	129	83	17
TOP	2,311	400	1,203	208	195	121	45	38	19	11	45	23	3
TOTAL	5,051	400	1,203	1,280	925	496	205	105	77	60	174	106	20
TOTAL ALL SPECIES													
BOLE	29,395	0	0	4,926	3,580	3,352	2,667	1,764	1,827	1,705	1,467	5,372	2,735
TOP	144,187	38,162	91,453	3,623	2,038	1,651	1,134	826	769	693	566	2,335	937
TOTAL	173,582	38,162	91,453	8,549	5,618	5,003	3,801	2,590	2,596	2,398	2,033	7,707	3,672

Table B-23.—Dry weight of small trees and rough and rotten trees by species, tree component, and diameter class, Southern Rocky Mountains, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS											
		2	4	6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons												
DOUGLAS-FIR													
BOLE	1,936	0	0	242	248	151	133	131	157	158	169	315	232
TOP	7,389	1,702	4,320	232	223	145	124	82	91	94	87	188	101
TOTAL	9,325	1,702	4,320	474	471	296	257	213	248	252	256	503	333
PONDEROSA PINE													
BOLE	2,981	0	0	342	395	168	237	202	370	266	220	519	262
TOP	17,346	4,252	10,008	803	446	177	200	150	268	158	135	435	314
TOTAL	20,327	4,252	10,008	1,145	841	345	437	352	638	424	355	954	576
TRUE FIRS													
BOLE	2,455	0	0	434	383	241	257	208	180	131	157	263	201
TOP	11,714	3,256	6,721	398	338	195	188	124	98	72	76	148	100
TOTAL	14,169	3,256	6,721	832	721	436	445	332	278	203	233	411	301
ENGELMANN SPRUCE													
BOLE	3,246	0	0	324	348	277	276	254	267	383	277	645	195
TOP	9,491	2,529	5,217	302	268	199	180	121	119	149	102	243	62
TOTAL	12,737	2,529	5,217	626	616	476	456	375	386	532	379	888	257
WESTERN LARCH													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN HEMLOCK													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0
WESTERN WHITE PINE													
BOLE	3	0	0	0	0	0	0	0	0	0	0	1	2
TOP	7	1	3	0	0	0	0	0	0	0	0	1	2
TOTAL	10	1	3	0	0	0	0	0	0	0	0	2	4
WESTERN RED CEDAR													
BOLE	0	0	0	0	0	0	0	0	0	0	0	0	0
TOP	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0

LODGEPOLE PINE													
BOLE	1,913	0	0	455	397	252	202	204	136	126	74	64	3
TOP	9,488	2,171	6,223	415	187	135	99	91	58	49	28	31	1
TOTAL	11,401	2,171	6,223	870	584	387	301	295	194	175	102	95	4
OTHER SOFTWOODS													
BOLE	2,344	0	0	222	230	174	179	184	213	169	153	416	404
TOP	2,760	375	876	232	213	141	133	124	124	89	78	229	146
TOTAL	5,104	375	876	454	443	315	312	308	337	258	231	645	550
TOTAL SOFTWOODS													
BOLE	14,878	0	0	2,019	2,001	1,263	1,284	1,183	1,323	1,233	1,050	2,223	1,299
TOP	58,195	14,286	33,368	2,382	1,675	992	924	692	758	611	506	1,275	726
TOTAL	73,073	14,286	33,368	4,401	3,676	2,255	2,208	1,875	2,081	1,844	1,556	3,498	2,025
ASPEN & COTTONWOOD													
BOLE	20,458	0	0	5,304	5,258	3,974	1,707	1,292	1,062	847	515	458	41
TOP	15,542	2,212	7,435	1,241	1,386	1,280	606	464	398	237	157	115	11
TOTAL	36,000	2,212	7,435	6,545	6,644	5,254	2,313	1,756	1,460	1,084	672	573	52
OTHER HARDWOODS													
BOLE	1,922	0	0	395	309	240	238	198	171	122	95	136	18
TOP	1,754	319	570	132	117	121	127	112	92	59	44	56	5
TOTAL	3,676	319	570	527	426	361	365	310	263	181	139	192	23
TOTAL HARDWOODS													
BOLE	22,380	0	0	5,699	5,567	4,214	1,945	1,490	1,233	969	610	594	59
TOP	17,296	2,531	8,005	1,373	1,503	1,401	733	576	490	296	201	171	16
TOTAL	39,676	2,531	8,005	7,072	7,070	5,615	2,678	2,066	1,723	1,265	811	765	75
TOTAL ALL SPECIES													
BOLE	37,258	0	0	7,718	7,568	5,477	3,229	2,673	2,556	2,202	1,660	2,817	1,358
TOP	75,491	16,817	41,373	3,755	3,178	2,393	1,657	1,268	1,248	907	707	1,446	742
TOTAL	112,749	16,817	41,373	11,473	10,746	7,870	4,886	3,941	3,804	3,109	2,367	4,263	2,100

Table B-24.—Dry weight of small trees and rough and rotten trees by species, tree component, and diameter class, Rocky Mountains, 1977

SPECIES AND TREE COMPONENT	TOTAL	TWO INCH DIAMETER CLASS											
		2	4	6	8	10	12	14	16	18	20	22-28	30+
	Thousand tons												
DOUGLAS-FIR													
BOLE	8,452	0	0	891	859	826	589	621	706	691	606	1,708	955
TOP	38,342	10,322	23,801	724	632	529	339	285	297	275	222	635	281
TOTAL	46,794	10,322	23,801	1,615	1,491	1,355	928	906	1,003	966	828	2,343	1,236
PONDEROSA PINE													
BOLE	5,160	0	0	520	588	392	407	385	546	415	331	942	634
TOP	30,384	7,064	18,606	1,076	591	298	304	269	386	268	215	786	521
TOTAL	35,544	7,064	18,606	1,596	1,179	690	711	654	932	683	546	1,728	1,155
TRUE FIRS													
BOLE	6,396	0	0	823	751	597	594	495	518	461	376	1,056	725
TOP	37,792	12,092	21,935	789	654	419	364	259	238	202	161	445	234
TOTAL	44,188	12,092	21,935	1,612	1,405	1,016	958	754	756	663	537	1,501	959
ENGELMANN SPRUCE													
BOLE	5,846	0	0	435	445	484	378	378	389	504	411	2,000	422
TOP	16,401	4,903	8,472	426	355	305	238	182	174	198	157	854	137
TOTAL	22,247	4,903	8,472	861	800	789	616	560	563	702	568	2,854	559
WESTERN LARCH													
BOLE	1,362	0	0	139	111	137	90	90	101	95	76	318	205
TOP	6,330	1,136	4,584	138	82	83	36	35	34	29	21	99	53
TOTAL	7,692	1,136	4,584	277	193	220	126	125	135	124	97	417	258
WESTERN HEMLOCK													
BOLE	1,141	0	0	29	62	76	98	86	156	138	118	284	94
TOP	2,966	1,171	1,407	39	36	34	31	27	41	35	31	83	31
TOTAL	4,107	1,171	1,407	68	98	110	129	113	197	173	149	367	125
WESTERN WHITE PINE													
BOLE	801	0	0	18	29	34	43	29	58	66	65	263	196
TOP	1,326	244	607	19	16	16	20	14	28	35	32	177	118
TOTAL	2,127	244	607	37	45	50	63	43	86	101	97	440	314
WESTERN RED CEDAR													
BOLE	1,174	0	0	42	39	66	71	58	72	76	83	316	351
TOP	5,396	1,891	2,888	48	42	47	41	34	39	41	39	162	124
TOTAL	6,570	1,891	2,888	90	81	113	112	92	111	117	122	478	475

LODGEPOLE PINE													
BOLE	7,977	0	0	2,639	1,561	1,351	1,214	448	286	219	134	122	3
TOP	55,753	12,213	39,021	2,236	760	584	426	187	121	90	53	61	1
TOTAL	63,730	12,213	39,021	4,875	2,321	1,935	1,640	635	407	309	187	183	4
OTHER SOFTWOODS													
BOLE	3,224	0	0	337	406	277	307	290	260	224	188	503	432
TOP	5,381	1,012	2,297	302	350	207	214	188	150	120	96	285	160
TOTAL	8,605	1,012	2,297	639	756	484	521	478	410	344	284	788	592
TOTAL SOFTWOODS													
BOLE	41,533	0	0	5,873	4,851	4,240	3,791	2,880	3,092	2,889	2,388	7,512	4,017
TOP	200,071	52,048	123,618	5,797	3,518	2,522	2,013	1,480	1,508	1,293	1,027	3,587	1,660
TOTAL	241,604	52,048	123,618	11,670	8,369	6,762	5,804	4,360	4,600	4,182	3,415	11,099	5,677
ASPEN & COTTONWOOD													
BOLE	22,465	0	0	5,983	5,818	4,232	1,846	1,346	1,114	893	641	538	54
TOP	17,166	2,455	8,235	1,396	1,550	1,369	646	498	417	247	202	137	14
TOTAL	39,631	2,455	8,235	7,379	7,368	5,601	2,492	1,844	1,531	1,140	843	675	68
OTHER HARDWOODS													
BOLE	2,655	0	0	788	479	357	259	211	177	125	98	139	22
TOP	2,441	476	973	185	148	153	132	116	92	60	44	57	5
TOTAL	5,096	476	973	973	627	510	391	327	269	185	142	196	27
TOTAL HARDWOODS													
BOLE	25,120	0	0	6,771	6,297	4,589	2,105	1,557	1,291	1,018	739	677	76
TOP	19,607	2,931	9,208	1,581	1,698	1,522	778	614	509	307	246	194	19
TOTAL	44,727	2,931	9,208	8,352	7,995	6,111	2,883	2,171	1,800	1,325	985	871	95
TOTAL ALL SPECIES													
BOLE	66,653	0	0	12,644	11,148	8,829	5,896	4,437	4,383	3,907	3,127	8,189	4,093
TOP	219,678	54,979	132,826	7,378	5,216	4,044	2,791	2,094	2,017	1,600	1,273	3,781	1,679
TOTAL	286,331	54,979	132,826	20,022	16,364	12,873	8,687	6,531	6,400	5,507	4,400	11,970	5,772

Table B-25.—Dry weight of timber by ownership and softwoods and hardwoods, and by type of timber, Arizona, 1977

OWNERSHIP AND SPECIES GROUP	TOTAL ALL TYPES			TYPE OF TIMBER: GROWING STOCK			ROUGH & ROTTEN			SMALL TREES
	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL
	Thousand tons									
PUBLIC:										
NATIONAL FOREST										
SOFTWOOD	71,213	46,541	24,672	62,519	45,037	17,482	2,809	1,504	1,305	5,885
HARDWOOD	4,223	2,856	1,367	2,184	1,839	345	1,709	1,017	692	330
TOTAL	75,436	49,397	26,039	64,703	46,876	17,827	4,518	2,521	1,997	6,215
OTHER PUBLIC										
SOFTWOOD	33,369	20,636	12,733	30,477	20,093	10,384	1,180	543	637	1,712
HARDWOOD	1,752	1,248	504	873	663	210	827	585	242	52
TOTAL	35,121	21,884	13,237	31,350	20,756	10,594	2,007	1,128	879	1,764
TOTAL, PUBLIC										
SOFTWOOD	104,582	67,177	37,405	92,996	65,130	27,866	3,989	2,047	1,942	7,597
HARDWOOD	5,975	4,104	1,871	3,057	2,502	555	2,536	1,602	934	382
TOTAL	110,557	71,281	39,276	96,053	67,632	28,421	6,525	3,649	2,876	7,979
PRIVATE:										
FOREST INDUSTRY										
SOFTWOOD	0	0	0	0	0	0	0	0	0	0
HARDWOOD	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0
FARMER & OTHER										
SOFTWOOD	2,419	1,498	921	2,220	1,463	757	76	35	41	123
HARDWOOD	1,433	1,020	413	715	542	173	675	478	197	43
TOTAL	3,852	2,518	1,334	2,935	2,005	930	751	513	238	166
TOTAL, PRIVATE										
SOFTWOOD	2,419	1,498	921	2,220	1,463	757	76	35	41	123
HARDWOOD	1,433	1,020	413	715	542	173	675	478	197	43
TOTAL	3,852	2,518	1,334	2,935	2,005	930	751	513	238	166
TOTAL, ALL OWNERS										
SOFTWOOD	107,001	68,675	38,326	95,216	66,593	28,623	4,065	2,082	1,983	7,720
HARDWOOD	7,408	5,124	2,284	3,772	3,044	728	3,211	2,080	1,131	425
TOTAL	114,409	73,799	40,610	98,988	69,637	29,351	7,276	4,162	3,114	8,145

Table B-26.—Dry weight of timber by ownership and softwoods and hardwoods, and by type of timber, Colorado, 1977

OWNERSHIP AND SPECIES GROUP	TOTAL ALL TYPES			TYPE OF TIMBER: GROWING STOCK			TYPE OF TIMBER: ROUGH & ROTTEN			TYPE OF TIMBER: SMALL TREES
	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL
	Thousand tons									
PUBLIC:										
NATIONAL FOREST										
SOFTWOOD	176,689	122,064	54,625	152,376	116,182	36,194	9,030	5,882	3,148	15,283
HARDWOOD	40,807	30,469	10,338	27,349	22,702	4,647	9,798	7,767	2,031	3,660
TOTAL	217,496	152,533	64,963	179,725	138,884	40,841	18,828	13,649	5,179	18,943
OTHER PUBLIC										
SOFTWOOD	14,677	9,733	4,944	12,692	9,354	3,338	599	379	220	1,386
HARDWOOD	4,200	3,000	1,200	2,501	2,046	455	1,165	954	211	534
TOTAL	18,877	12,733	6,144	15,193	11,400	3,793	1,764	1,333	431	1,920
TOTAL, PUBLIC										
SOFTWOOD	191,366	131,797	59,569	165,068	125,536	39,532	9,629	6,261	3,368	16,669
HARDWOOD	45,007	33,469	11,538	29,850	24,748	5,102	10,963	8,721	2,242	4,194
TOTAL	236,373	165,266	71,107	194,918	150,284	44,634	20,592	14,982	5,610	20,863
PRIVATE:										
FOREST INDUSTRY										
SOFTWOOD	429	289	140	384	286	98	3	3	0	42
HARDWOOD	20	15	5	12	10	2	5	5	0	3
TOTAL	449	304	145	396	296	100	8	8	0	45
FARMER & OTHER										
SOFTWOOD	49,552	32,842	16,710	42,840	31,566	11,274	2,035	1,276	759	4,677
HARDWOOD	17,524	12,524	5,000	10,439	8,544	1,895	4,856	3,980	876	2,229
TOTAL	67,076	45,366	21,710	53,279	40,110	13,169	6,891	5,256	1,635	6,906
TOTAL, PRIVATE										
SOFTWOOD	49,981	33,131	16,850	43,224	31,852	11,372	2,038	1,279	759	4,719
HARDWOOD	17,544	12,539	5,005	10,451	8,554	1,897	4,861	3,985	876	2,232
TOTAL	67,525	45,670	21,855	53,675	40,406	13,269	6,899	5,264	1,635	6,951
TOTAL, ALL OWNERS										
SOFTWOOD	241,347	164,928	76,419	208,292	157,388	50,904	11,667	7,540	4,127	21,388
HARDWOOD	62,551	46,008	16,543	40,301	33,302	6,999	15,824	12,706	3,118	6,426
TOTAL	303,898	210,936	92,962	248,593	190,690	57,903	27,491	20,246	7,245	27,814

Table B-27.—Dry weight of timber by ownership and soft woods and hardwoods, and by type of timber, Idaho, 1977

OWNERSHIP AND SPECIES GROUP	TOTAL ALL TYPES			TYPE OF TIMBER: GROWING STOCK			TYPE OF TIMBER: ROUGH & ROTTEN			TYPE OF TIMBER: SMALL TREES
	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL
	Thousand tons									
PUBLIC:										
NATIONAL FOREST										
SOFTWOOD	396,250	302,629	93,621	367,278	296,513	70,765	9,215	6,116	3,099	19,757
HARDWOOD	1,777	1,348	429	1,147	958	189	500	390	110	130
TOTAL	398,027	303,977	94,050	368,425	297,471	70,954	9,715	6,506	3,209	19,887
OTHER PUBLIC										
SOFTWOOD	65,528	46,981	18,547	58,365	45,405	12,960	2,405	1,576	829	4,758
HARDWOOD	1,167	874	293	807	676	131	247	198	49	113
TOTAL	66,695	47,855	18,840	59,172	46,081	13,091	2,652	1,774	878	4,871
TOTAL, PUBLIC										
SOFTWOOD	461,778	349,610	112,168	425,643	341,918	83,725	11,620	7,692	3,928	24,515
HARDWOOD	2,944	2,222	722	1,954	1,634	320	747	588	159	243
TOTAL	464,722	351,832	112,890	427,597	343,552	84,045	12,367	8,280	4,087	24,758
PRIVATE:										
FOREST INDUSTRY										
SOFTWOOD	58,449	41,911	16,538	52,059	40,505	11,554	2,146	1,406	740	4,244
HARDWOOD	662	493	169	460	382	78	138	111	27	64
TOTAL	59,111	42,404	16,707	52,519	40,887	11,632	2,284	1,517	767	4,308
FARMER & OTHER										
SOFTWOOD	78,278	56,128	22,150	69,718	54,241	15,477	2,878	1,887	991	5,682
HARDWOOD	1,896	1,415	481	1,313	1,096	217	398	319	79	185
TOTAL	80,174	57,543	22,631	71,031	55,337	15,694	3,276	2,206	1,070	5,867
TOTAL, PRIVATE										
SOFTWOOD	136,727	98,039	38,688	121,777	94,746	27,031	5,024	3,293	1,731	9,926
HARDWOOD	2,558	1,908	650	1,773	1,478	295	536	430	106	249
TOTAL	139,285	99,947	39,338	123,550	96,224	27,326	5,560	3,723	1,837	10,175
TOTAL, ALL OWNERS										
SOFTWOOD	598,505	447,649	150,856	547,420	436,664	110,756	16,644	10,985	5,659	34,441
HARDWOOD	5,502	4,130	1,372	3,727	3,112	615	1,283	1,018	265	492
TOTAL	604,007	451,779	152,228	551,147	439,776	111,371	17,927	12,003	5,924	34,933

Table B-28.—Dry weight of timber by ownership and softwoods and hardwoods, and by type of timber, Montana, 1977

OWNERSHIP AND SPECIES GROUP	TOTAL ALL TYPES			TYPE OF TIMBER: GROWING STOCK			TYPE OF TIMBER: ROUGH & ROTTEN			TYPE OF TIMBER: SMALL TREES
	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL
	Thousand tons									
PUBLIC:										
NATIONAL FOREST										
SOFTWOOD	364,416	255,687	108,729	319,743	250,157	69,586	7,160	5,530	1,630	37,513
HARDWOOD	969	760	209	785	688	97	96	72	24	88
TOTAL	365,385	256,447	108,938	320,528	250,845	69,683	7,256	5,602	1,654	37,601
OTHER PUBLIC										
SOFTWOOD	63,362	38,105	25,257	51,940	36,640	15,300	2,331	1,465	866	9,091
HARDWOOD	1,268	896	372	1,053	782	271	156	114	42	59
TOTAL	64,630	39,001	25,629	52,993	37,422	15,571	2,487	1,579	908	9,150
TOTAL, PUBLIC										
SOFTWOOD	427,778	293,792	133,986	371,683	286,797	84,886	9,491	6,995	2,496	46,604
HARDWOOD	2,237	1,656	581	1,838	1,470	368	252	186	66	147
TOTAL	430,015	295,448	134,567	373,521	288,267	85,254	9,743	7,181	2,562	46,751
PRIVATE:										
FOREST INDUSTRY										
SOFTWOOD	52,114	31,344	20,770	42,727	30,142	12,585	1,906	1,202	704	7,481
HARDWOOD	121	88	33	101	76	25	14	12	2	6
TOTAL	52,235	31,432	20,803	42,828	30,218	12,610	1,920	1,214	706	7,487
FARMER & OTHER										
SOFTWOOD	123,596	74,335	49,261	101,320	71,480	29,840	4,541	2,855	1,686	17,735
HARDWOOD	3,542	2,504	1,038	2,942	2,185	757	433	319	114	167
TOTAL	127,138	76,839	50,299	104,262	73,665	30,597	4,974	3,174	1,800	17,902
TOTAL, PRIVATE										
SOFTWOOD	175,710	105,679	70,031	144,047	101,622	42,425	6,447	4,057	2,390	25,216
HARDWOOD	3,663	2,592	1,071	3,043	2,261	782	447	331	116	173
TOTAL	179,373	108,271	71,102	147,090	103,883	43,207	6,894	4,388	2,506	25,389
TOTAL, ALL OWNERS										
SOFTWOOD	603,488	399,471	204,017	515,730	388,419	127,311	15,938	11,052	4,886	71,820
HARDWOOD	5,900	4,248	1,652	4,881	3,731	1,150	699	517	182	320
TOTAL	609,388	403,719	205,669	520,611	392,150	128,461	16,637	11,569	5,06[illegible]	72,140

Table B-29.—Dry weight of timber by ownership and softwoods and hardwoods, and by type of timber, Nevada, 1977

OWNERSHIP AND SPECIES GROUP	TOTAL ALL TYPES			TYPE OF TIMBER: GROWING STOCK			TYPE OF TIMBER: ROUGH & ROTTEN			TYPE OF TIMBER: SMALL TREES
	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL
	Thousand tons									
PUBLIC:										
NATIONAL FOREST										
SOFTWOOD	1,675	1,193	482	1,505	1,113	392	127	80	47	43
HARDWOOD	395	316	79	228	178	50	161	138	23	6
TOTAL	2,070	1,509	561	1,733	1,291	442	288	218	70	49
OTHER PUBLIC										
SOFTWOOD	161	121	40	157	121	36	0	0	0	4
HARDWOOD	0	0	0	0	0	0	0	0	0	0
TOTAL	161	121	40	157	121	36	0	0	0	4
TOTAL, PUBLIC										
SOFTWOOD	1,836	1,314	522	1,662	1,234	428	127	80	47	47
HARDWOOD	395	316	79	228	178	50	161	138	23	6
TOTAL	2,231	1,630	601	1,890	1,412	478	288	218	70	53
PRIVATE:										
FOREST INDUSTRY										
SOFTWOOD	275	211	64	269	210	59	1	1	0	5
HARDWOOD	0	0	0	0	0	0	0	0	0	0
TOTAL	275	211	64	269	210	59	1	1	0	5
FARMER & OTHER										
SOFTWOOD	2,592	1,923	669	2,472	1,898	574	55	25	30	65
HARDWOOD	0	0	0	0	0	0	0	0	0	0
TOTAL	2,592	1,923	669	2,472	1,898	574	55	25	30	65
TOTAL, PRIVATE										
SOFTWOOD	2,867	2,134	733	2,741	2,108	633	56	26	30	70
HARDWOOD	0	0	0	0	0	0	0	0	0	0
TOTAL	2,867	2,134	733	2,741	2,108	633	56	26	30	70
TOTAL, ALL OWNERS										
SOFTWOOD	4,703	3,448	1,255	4,403	3,342	1,061	183	106	77	117
HARDWOOD	395	316	79	228	178	50	161	138	23	6
TOTAL	5,098	3,764	1,334	4,631	3,520	1,111	344	244	100	123

Table B-30.—Dry weight of timber by ownership and softwoods and hardwoods, and by type of timber, New Mexico, 1977

OWNERSHIP AND SPECIES GROUP	TYPE OF TIMBER									
	TOTAL ALL TYPES			GROWING STOCK			ROUGH & ROTTEN			SMALL TREES
	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL
	Thousand tons									
PUBLIC:										
NATIONAL FOREST										
SOFTWOOD	64,152	42,220	21,932	55,040	40,022	15,018	3,773	2,198	1,575	5,339
HARDWOOD	6,720	4,783	1,937	3,943	3,333	610	1,929	1,450	479	848
TOTAL	70,872	47,003	23,869	58,983	43,355	15,628	5,702	3,648	2,054	6,187
OTHER PUBLIC										
SOFTWOOD	29,493	19,477	10,016	25,482	18,770	6,712	1,243	707	536	2,768
HARDWOOD	759	597	162	538	442	96	187	155	32	34
TOTAL	30,252	20,074	10,178	26,020	19,212	6,808	1,430	862	568	2,802
TOTAL, PUBLIC										
SOFTWOOD	93,645	61,697	31,948	80,522	58,792	21,730	5,016	2,905	2,111	8,107
HARDWOOD	7,479	5,380	2,099	4,481	3,775	706	2,116	1,605	511	882
TOTAL	101,124	67,077	34,047	85,003	62,567	22,436	7,132	4,510	2,622	8,989
PRIVATE:										
FOREST INDUSTRY										
SOFTWOOD	0	0	0	0	0	0	0	0	0	0
HARDWOOD	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0
FARMER & OTHER										
SOFTWOOD	34,473	22,766	11,707	29,798	21,944	7,854	1,440	822	618	3,235
HARDWOOD	7,775	6,122	1,653	5,515	4,533	982	1,908	1,589	319	352
TOTAL	42,248	28,888	13,360	35,313	26,477	8,836	3,348	2,411	937	3,587
TOTAL, PRIVATE										
SOFTWOOD	34,473	22,766	11,707	29,798	21,944	7,854	1,440	822	618	3,235
HARDWOOD	7,775	6,122	1,653	5,515	4,533	982	1,908	1,589	319	352
TOTAL	42,248	28,888	13,360	35,313	26,477	8,836	3,348	2,411	937	3,587
TOTAL, ALL OWNERS										
SOFTWOOD	128,118	84,463	43,655	110,320	80,736	29,584	6,456	3,727	2,729	11,342
HARDWOOD	15,254	11,502	3,752	9,996	8,308	1,688	4,024	3,194	830	1,234
TOTAL	143,372	95,965	47,407	120,316	89,044	31,272	10,480	6,921	3,559	12,576

Table B-31.—Dry weight of timber by ownership and soft woods and hardwoods, and by type of timber, western South Dakota, 1977

OWNERSHIP AND SPECIES GROUP	TOTAL ALL TYPES			TYPE OF TIMBER: GROWING STOCK			TYPE OF TIMBER: ROUGH & ROTTEN			TYPE OF TIMBER: SMALL TREES
	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL
	Thousand tons									
PUBLIC:										
NATIONAL FOREST										
SOFTWOOD	28,759	19,023	9,736	25,512	18,855	6,657	287	168	119	2,960
HARDWOOD	421	325	96	165	132	33	246	193	53	10
TOTAL	29,180	19,348	9,832	25,677	18,987	6,690	533	361	172	2,970
OTHER PUBLIC										
SOFTWOOD	1,980	1,118	862	1,579	1,101	478	34	17	17	367
HARDWOOD	35	21	14	13	13	0	10	8	2	12
TOTAL	2,015	1,139	876	1,592	1,114	478	44	25	19	379
TOTAL, PUBLIC										
SOFTWOOD	30,739	20,141	10,598	27,091	19,956	7,135	321	185	136	3,327
HARDWOOD	456	346	110	178	145	33	256	201	55	22
TOTAL	31,195	20,487	10,708	27,269	20,101	7,168	577	386	191	3,349
PRIVATE:										
FOREST INDUSTRY										
SOFTWOOD	476	270	206	382	267	115	6	3	3	88
HARDWOOD	27	17	10	10	10	0	8	7	1	9
TOTAL	503	287	216	392	277	115	14	10	4	97
FARMER & OTHER										
SOFTWOOD	4,617	2,614	2,003	3,686	2,574	1,112	76	40	36	855
HARDWOOD	264	155	109	101	87	14	85	68	17	78
TOTAL	4,881	2,769	2,112	3,787	2,661	1,126	161	108	53	933
TOTAL, PRIVATE										
SOFTWOOD	5,093	2,884	2,209	4,068	2,841	1,227	82	43	39	943
HARDWOOD	291	172	119	111	97	14	93	75	18	87
TOTAL	5,384	3,056	2,328	4,179	2,938	1,241	175	118	57	1,030
TOTAL, ALL OWNERS										
SOFTWOOD	35,832	23,025	12,807	31,159	22,797	8,362	403	228	175	4,270
HARDWOOD	747	518	229	289	242	47	349	276	73	109
TOTAL	36,579	23,543	13,036	31,448	23,039	8,409	752	504	248	4,379

Table B-32.—Dry weight of timber by ownership and softwoods and hardwoods, and by type of timber, Utah, 1977

OWNERSHIP AND SPECIES GROUP	TOTAL ALL TYPES			TYPE OF TIMBER: GROWING STOCK			TYPE OF TIMBER: ROUGH & ROTTEN			TYPE OF TIMBER: SMALL TREES
	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL
	Thousand tons									
PUBLIC:										
NATIONAL FOREST										
SOFTWOOD	55,597	36,519	19,078	48,555	35,743	12,812	1,570	776	794	5,472
HARDWOOD	11,660	7,968	3,692	7,518	6,160	1,358	2,668	1,808	860	1,474
TOTAL	67,257	44,487	22,770	56,073	41,903	14,170	4,238	2,584	1,654	6,946
OTHER PUBLIC										
SOFTWOOD	9,303	6,067	3,236	7,614	5,715	1,899	807	352	455	882
HARDWOOD	3,850	2,838	1,012	2,435	2,016	419	1,090	822	268	325
TOTAL	13,153	8,905	4,248	10,049	7,731	2,318	1,897	1,174	723	1,207
TOTAL, PUBLIC										
SOFTWOOD	64,900	42,586	22,314	56,169	41,458	14,711	2,377	1,128	1,249	6,354
HARDWOOD	15,510	10,806	4,704	9,953	8,176	1,777	3,758	2,630	1,128	1,799
TOTAL	80,410	53,392	27,018	66,122	49,634	16,488	6,135	3,758	2,377	8,153
PRIVATE:										
FOREST INDUSTRY										
SOFTWOOD	0	0	0	0	0	0	0	0	0	0
HARDWOOD	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0
FARMER & OTHER										
SOFTWOOD	7,740	5,050	2,690	6,336	4,755	1,581	671	295	376	733
HARDWOOD	7,643	5,635	2,008	4,835	4,003	832	2,162	1,632	530	646
TOTAL	15,383	10,685	4,698	11,171	8,758	2,413	2,833	1,927	906	1,379
TOTAL, PRIVATE										
SOFTWOOD	7,740	5,050	2,690	6,336	4,755	1,581	671	295	376	733
HARDWOOD	7,643	5,635	2,008	4,835	4,003	832	2,162	1,632	530	646
TOTAL	15,383	10,685	4,698	11,171	8,758	2,413	2,833	1,927	906	1,379
TOTAL, ALL OWNERS										
SOFTWOOD	72,640	47,636	25,004	62,505	46,213	16,292	3,048	1,423	1,625	7,087
HARDWOOD	23,153	16,441	6,712	14,788	12,179	2,609	5,920	4,262	1,658	2,445
TOTAL	95,793	64,077	31,716	77,293	58,392	18,901	8,968	5,685	3,283	9,532

Table B-33.—Dry weight of timber by ownership and softwoods and hardwoods, and by type of timber, Wyoming, 1977

OWNERSHIP AND SPECIES GROUP	TOTAL ALL TYPES			TYPE OF TIMBER: GROWING STOCK			ROUGH & ROTTEN			SMALL TREES
	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL
	Thousand tons									
PUBLIC:										
NATIONAL FOREST										
SOFTWOOD	111,662	74,217	37,445	93,088	70,257	22,831	6,682	3,960	2,722	11,892
HARDWOOD	2,612	1,877	735	1,337	1,101	236	921	776	145	354
TOTAL	114,274	76,094	38,180	94,425	71,358	23,067	7,603	4,736	2,867	12,246
OTHER PUBLIC										
SOFTWOOD	13,767	8,060	5,707	11,107	7,882	3,225	353	178	175	2,307
HARDWOOD	1,185	841	344	984	782	202	75	59	16	126
TOTAL	14,952	8,901	6,051	12,091	8,664	3,427	428	237	191	2,433
TOTAL, PUBLIC										
SOFTWOOD	125,429	82,277	43,152	104,195	78,139	26,056	7,035	4,138	2,897	14,199
HARDWOOD	3,797	2,718	1,079	2,321	1,883	438	996	835	161	480
TOTAL	129,226	84,995	44,231	106,516	80,022	26,494	8,031	4,973	3,058	14,679
PRIVATE:										
FOREST INDUSTRY										
SOFTWOOD	1,458	851	607	1,183	837	346	29	14	15	246
HARDWOOD	69	50	19	58	47	11	3	3	0	8
TOTAL	1,527	901	626	1,241	884	357	32	17	15	254
FARMER & OTHER										
SOFTWOOD	18,116	10,606	7,510	14,610	10,368	4,242	470	238	232	3,036
HARDWOOD	1,836	1,302	534	1,524	1,211	313	118	91	27	194
TOTAL	19,952	11,908	8,044	16,134	11,579	4,555	588	329	259	3,230
TOTAL, PRIVATE										
SOFTWOOD	19,574	11,457	8,117	15,793	11,205	4,588	499	252	247	3,282
HARDWOOD	1,905	1,352	553	1,582	1,258	324	121	94	27	202
TOTAL	21,479	12,809	8,670	17,375	12,463	4,912	620	346	274	3,484
TOTAL, ALL OWNERS										
SOFTWOOD	145,003	93,734	51,269	119,988	89,344	30,644	7,534	4,390	3,144	17,481
HARDWOOD	5,702	4,070	1,632	3,903	3,141	762	1,117	929	188	682
TOTAL	150,705	97,804	52,901	123,891	92,485	31,406	8,651	5,319	3,332	18,163

Table B-34.—Dry weight of timber by ownership and softwoods and hardwoods, and by type of timber, Northern Rocky Mountains, 1977

OWNERSHIP AND SPECIES GROUP	TOTAL ALL TYPES			TYPE OF TIMBER: GROWING STOCK			TYPE OF TIMBER: ROUGH & ROTTEN			TYPE OF TIMBER: SMALL TREES
	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL
	Thousand tons									
PUBLIC:										
NATIONAL FOREST										
SOFTWOOD	901,087	651,556	249,531	805,621	635,782	169,839	23,344	15,774	7,570	72,122
HARDWOOD	5,779	4,310	1,469	3,434	2,879	555	1,763	1,431	332	582
TOTAL	906,866	655,866	251,000	809,055	638,661	170,394	25,107	17,205	7,902	72,704
OTHER PUBLIC										
SOFTWOOD	144,637	94,264	50,373	122,991	91,028	31,963	5,123	3,236	1,887	16,523
HARDWOOD	3,655	2,632	1,023	2,857	2,253	604	488	379	109	310
TOTAL	148,292	96,896	51,396	125,848	93,281	32,567	5,611	3,615	1,996	16,833
TOTAL, PUBLIC										
SOFTWOOD	1,045,724	745,820	299,904	928,612	726,810	201,802	28,467	19,010	9,457	88,645
HARDWOOD	9,434	6,942	2,492	6,291	5,132	1,159	2,251	1,810	441	892
TOTAL	1,055,158	752,762	302,396	934,903	731,942	202,961	30,718	20,820	9,898	89,537
PRIVATE:										
FOREST INDUSTRY										
SOFTWOOD	112,497	74,376	38,121	96,351	71,751	24,600	4,087	2,625	1,462	12,059
HARDWOOD	879	648	231	629	515	114	163	133	30	87
TOTAL	113,376	75,024	38,352	96,980	72,266	24,714	4,250	2,758	1,492	12,146
FARMER & OTHER										
SOFTWOOD	224,607	143,683	80,924	189,334	138,663	50,671	7,965	5,020	2,945	27,308
HARDWOOD	7,538	5,376	2,162	5,880	4,579	1,301	1,034	797	237	624
TOTAL	232,145	149,059	83,086	195,214	143,242	51,972	8,999	5,817	3,182	27,932
TOTAL, PRIVATE										
SOFTWOOD	337,104	218,059	119,045	285,685	210,414	75,271	12,052	7,645	4,407	39,367
HARDWOOD	8,417	6,024	2,393	6,509	5,094	1,415	1,197	930	267	711
TOTAL	345,521	224,083	121,438	292,194	215,508	76,686	13,249	8,575	4,674	40,078
TOTAL, ALL OWNERS										
SOFTWOOD	1,382,828	963,879	418,949	1,214,297	937,224	277,073	40,519	26,655	13,864	128,012
HARDWOOD	17,851	12,966	4,885	12,800	10,226	2,574	3,448	2,740	708	1,603
TOTAL	1,400,679	976,845	423,834	1,227,097	947,450	279,647	43,967	29,395	14,572	129,615

Table B-35.—Dry weight of timber by ownership and softwoods and hardwoods, and by type of timber, Southern Rocky Mountains, 1977

OWNERSHIP AND SPECIES GROUP	TOTAL ALL TYPES			TYPE OF TIMBER: GROWING STOCK			ROUGH & ROTTEN			SMALL TREES
	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL
	Thousand tons									
PUBLIC:										
NATIONAL FOREST										
SOFTWOOD	369,326	248,537	120,789	319,995	238,097	81,898	17,309	10,440	6,869	32,022
HARDWOOD	63,805	46,392	17,413	41,222	34,212	7,010	16,265	12,180	4,085	6,318
TOTAL	433,131	294,929	138,202	361,217	272,309	88,908	33,574	22,620	10,954	38,340
OTHER PUBLIC										
SOFTWOOD	87,003	56,034	30,969	76,422	54,053	22,369	3,829	1,981	1,848	6,752
HARDWOOD	10,561	7,683	2,878	6,347	5,167	1,180	3,269	2,516	753	945
TOTAL	97,564	63,717	33,847	82,769	59,220	23,549	7,098	4,497	2,601	7,697
TOTAL, PUBLIC										
SOFTWOOD	456,329	304,571	151,758	396,417	292,150	104,267	21,138	12,421	8,717	38,774
HARDWOOD	74,366	54,075	20,291	47,569	39,379	8,190	19,534	14,696	4,838	7,263
TOTAL	530,695	358,646	172,049	443,986	331,529	112,457	40,672	27,117	13,555	46,037
PRIVATE:										
FOREST INDUSTRY										
SOFTWOOD	704	500	204	653	496	157	4	4	0	47
HARDWOOD	20	15	5	12	10	2	5	5	0	3
TOTAL	724	515	209	665	506	159	9	9	0	50
FARMER & OTHER										
SOFTWOOD	96,776	64,079	32,697	83,666	61,626	22,040	4,277	2,453	1,824	8,833
HARDWOOD	34,375	25,301	9,074	21,504	17,622	3,882	9,601	7,679	1,922	3,270
TOTAL	131,151	89,380	41,771	105,170	79,248	25,922	13,878	10,132	3,746	12,103
TOTAL, PRIVATE										
SOFTWOOD	97,480	64,579	32,901	84,319	62,122	22,197	4,281	2,457	1,824	8,880
HARDWOOD	34,395	25,316	9,079	21,516	17,632	3,884	9,606	7,684	1,922	3,273
TOTAL	131,875	89,895	41,980	105,835	79,754	26,081	13,887	10,141	3,746	12,153
TOTAL, ALL OWNERS										
SOFTWOOD	553,809	369,150	184,659	480,736	354,272	126,464	25,419	14,878	10,541	47,654
HARDWOOD	108,761	79,391	29,370	69,085	57,011	12,074	29,140	22,380	6,760	10,536
TOTAL	662,570	448,541	214,029	549,821	411,283	138,538	54,559	37,258	17,301	58,190

Table B-36.—Dry weight of timber by ownership and softwoods and hardwoods, and by type of timber, Rocky Mountains, 1977

OWNERSHIP AND SPECIES GROUP	TOTAL ALL TYPES			TYPE OF TIMBER: GROWING STOCK			ROUGH & ROTTEN			SMALL TREES
	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL	BOLE	TOP	TOTAL
	Thousand tons									
PUBLIC:										
NATIONAL FOREST										
SOFTWOOD	1,270,413	900,093	370,320	1,125,616	873,879	251,737	40,653	26,214	14,439	104,144
HARDWOOD	69,584	50,702	18,882	44,656	37,091	7,565	18,028	13,611	4,417	6,900
TOTAL	1,339,997	950,795	389,202	1,170,272	910,970	259,302	58,681	39,825	18,856	111,044
OTHER PUBLIC										
SOFTWOOD	231,640	150,298	81,342	199,413	145,081	54,332	8,952	5,217	3,735	23,275
HARDWOOD	14,216	10,315	3,901	9,204	7,420	1,784	3,757	2,895	862	1,255
TOTAL	245,856	160,613	85,243	208,617	152,501	56,116	12,709	8,112	4,597	24,530
TOTAL, PUBLIC										
SOFTWOOD	1,502,053	1,050,391	451,662	1,325,029	1,018,960	306,069	49,605	31,431	18,174	127,419
HARDWOOD	83,800	61,017	22,783	53,860	44,511	9,349	21,785	16,506	5,279	8,155
TOTAL	1,585,853	1,111,408	474,445	1,378,889	1,063,471	315,418	71,390	47,937	23,453	135,574
PRIVATE:										
FOREST INDUSTRY										
SOFTWOOD	113,201	74,876	38,325	97,004	72,247	24,757	4,091	2,629	1,462	12,106
HARDWOOD	899	663	236	641	525	116	168	138	30	90
TOTAL	114,100	75,539	38,561	97,645	72,772	24,873	4,259	2,767	1,492	12,196
FARMER & OTHER										
SOFTWOOD	321,383	207,762	113,621	273,000	200,289	72,711	12,242	7,473	4,769	36,141
HARDWOOD	41,913	30,677	11,236	27,384	22,201	5,183	10,635	8,476	2,159	3,894
TOTAL	363,296	238,439	124,857	300,384	222,490	77,894	22,877	15,949	6,928	40,035
TOTAL, PRIVATE										
SOFTWOOD	434,584	282,638	151,946	370,004	272,536	97,468	16,333	10,102	6,231	48,247
HARDWOOD	42,812	31,340	11,472	28,025	22,726	5,299	10,803	8,614	2,189	3,984
TOTAL	477,396	313,978	163,418	398,029	295,262	102,767	27,136	18,716	8,420	52,231
TOTAL, ALL OWNERS										
SOFTWOOD	1,936,637	1,333,029	603,608	1,695,033	1,291,496	403,537	65,938	41,533	24,405	175,666
HARDWOOD	126,612	92,357	34,255	81,885	67,237	14,648	32,588	25,120	7,468	12,139
TOTAL	2,063,249	1,425,386	637,863	1,776,918	1,358,733	418,185	98,526	66,653	31,873	187,805

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Van Hooser, Dwane D., Chojnacky, David C. Whole tree volume estimates for the Rocky Mountain States. Resour. Bull. INT-29 . Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station; 1983. 69 p.

Presents factors for converting current estimates of merchantable volume to weight, and models for predicting weights and volumes of tops and limbs, for important tree species in the Rocky Mountain States. Converts timber statistics from cubic foot volume to dry weight for tree components, such as bole, limbs, and top. Includes State-by-State data summaries.

KEYWORDS: forest inventory, biomass, wood fiber, fuelwood, utilization

The Intermountain Station, headquartered in Ogden, Utah, is one of eight regional experiment stations charged with providing scientific knowledge to help resource managers meet human needs and protect forest and range ecosystems.

The Intermountain Station includes the States of Montana, Idaho, Utah, Nevada, and western Wyoming. About 231 million acres, or 85 percent, of the land area in the Station territory are classified as forest and rangeland. These lands include grasslands, deserts, shrublands, alpine areas, and well-stocked forests. They supply fiber for forest industries; minerals for energy and industrial development; and water for domestic and industrial consumption. They also provide recreation opportunities for millions of visitors each year.

Field programs and research work units of the Station are maintained in:

Boise, Idaho

Bozeman, Montana (in cooperation with Montana State University)

Logan, Utah (in cooperation with Utah State University)

Missoula, Montana (in cooperation with the University of Montana)

Moscow, Idaho (in cooperation with the University of Idaho)

Provo, Utah (in cooperation with Brigham Young University)

Reno, Nevada (in cooperation with the University of Nevada)